



Concept Lecture - 1

1. If $\sin\theta = \frac{3}{5}$, then $\frac{\tan\theta + \cos\theta}{\cot\theta + \operatorname{cosec}\theta} = ?$
 अगर $\sin\theta = \frac{3}{5}$ है, तो $\frac{\tan\theta + \cos\theta}{\cot\theta + \operatorname{cosec}\theta} = ?$
 a) $\frac{29}{60}$ b) $\frac{31}{60}$ c) $\frac{34}{60}$ d) $\frac{37}{60}$
2. If $5\tan\theta = 4$, then $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta}$ is
 अगर $5\tan\theta = 4$ है, तो $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta} = ?$
 a) $\frac{2}{3}$ b) $\frac{1}{4}$ c) $\frac{1}{6}$ d) $\frac{1}{3}$
3. If $\sin\theta = \frac{a}{b}$, then the value of $\sec\theta - \cos\theta$ is (where $0^\circ < \theta < 90^\circ$)
 अगर $\sin\theta = \frac{a}{b}$ है, तो $\sec\theta - \cos\theta$ होगा- (जब $0^\circ < \theta < 90^\circ$)
 a) $\frac{a}{b\sqrt{b^2 - a^2}}$ b) $\frac{b^2}{a\sqrt{b^2 - a^2}}$
 c) $\frac{a^2}{b\sqrt{b^2 - a^2}}$ d) $\frac{\sqrt{b^2 + a^2}}{\sqrt{b^2 - a^2}}$
4. If $\frac{\sin\theta}{x} = \frac{\cos\theta}{y}$, then $\sin\theta - \cos\theta$ is equal to
 अगर $\frac{\sin\theta}{x} = \frac{\cos\theta}{y}$ है, तो $\sin\theta - \cos\theta = ?$
 a) $x - y$ b) $x + y$
 c) $\frac{x - y}{\sqrt{x^2 + y^2}}$ d) $\frac{(y - x)}{\sqrt{x^2 + y^2}}$
5. If $5\sin\theta - 4\cos\theta = 0$, $0^\circ < \theta < 90^\circ$, then the value of $\frac{5\sin\theta - 2\cos\theta}{5\sin\theta + 3\cos\theta}$ is:
 यदि $5\sin\theta - 4\cos\theta = 0$, $0^\circ < \theta < 90^\circ$ है, तो $\frac{5\sin\theta - 2\cos\theta}{5\sin\theta + 3\cos\theta}$ का मान है:
 a) $\frac{3}{8}$ b) $\frac{3}{7}$ c) $\frac{2}{7}$ d) $\frac{5}{8}$
6. If $2y \cos\theta = x \sin\theta$ and $2x \sec\theta - y \operatorname{cosec}\theta = 3$, then the value of $x^2 + 4y^2$ is
 यदि $2y \cos\theta = x \sin\theta$ और $2x \sec\theta - y \operatorname{cosec}\theta = 3$ हो, तो $x^2 + 4y^2$ का मान क्या होगा?
 a) 1 b) 2 c) 3 d) 4
7. If $0 < \theta < 90^\circ$, $3b \operatorname{cosec}\theta = a \sec\theta$ and $3a \sec\theta - b \operatorname{cosec}\theta = 8$, then the value of $9b^2 + a^2$ is:
 यदि $0 < \theta < 90^\circ$, $3b \operatorname{cosec}\theta = a \sec\theta$ और $3a \sec\theta - b \operatorname{cosec}\theta = 8$ है, तो $9b^2 + a^2$ का मान ज्ञात करें।
 a) 6 b) 8 c) 9 d) 7
8. If $\sec\theta(\cos\theta + \sin\theta) = \sqrt{2}$, then what is the value of $\frac{2\sin\theta}{\cos\theta - \sin\theta}$?
 यदि $\sec\theta(\cos\theta + \sin\theta) = \sqrt{2}$ है तो $\frac{2\sin\theta}{\cos\theta - \sin\theta}$ का मान क्या है?
 a) $3\sqrt{2}$ b) $\frac{3}{\sqrt{2}}$ c) $\frac{1}{\sqrt{2}}$ d) $\sqrt{2}$
9. If $\tan\theta = \frac{\sin\alpha - \cos\alpha}{\sin\alpha + \cos\alpha}$ then $(\sin\alpha + \cos\alpha)$ is
 अगर $\tan\theta = \frac{\sin\alpha - \cos\alpha}{\sin\alpha + \cos\alpha}$ है, तो $(\sin\alpha + \cos\alpha) = ?$
 a) $\pm\sqrt{2}\sin\theta$ b) $\pm\sqrt{2}\cos\theta$
 c) $\pm\frac{1}{\sqrt{2}}\sin\theta$ d) $\pm\frac{1}{\sqrt{2}}\cos\theta$
10. In a $\triangle ABC$, right angled at B , $AB = 7$ cm and $(AC - BC) = 1$ cm, the value of $(\sec C + \cot A)$ is:
 $\triangle ABC$ में, B पर समकोण है, $AB = 7$ cm और $(AC - BC) = 1$ cm है। $(\sec C + \cot A)$ का मान है:
 a) 1 b) $\frac{19}{24}$ c) $\frac{3}{4}$ d) $\frac{4}{3}$
11. If $\tan^2\theta = 1 - e^2$ then the value of $\sec\theta + \tan^3\theta \operatorname{cosec}\theta$ is
 अगर $\tan^2\theta = 1 - e^2$ है, तो $\sec\theta + \tan^3\theta \operatorname{cosec}\theta = ?$
 a) $(2 + e^2)^{\frac{3}{4}}$ b) $(2 - e^2)^{\frac{1}{2}}$
 c) $(2 + e^2)^{\frac{1}{2}}$ d) $(2 - e^2)^{\frac{3}{2}}$

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12. In a ΔABC , $\angle C = 90^\circ$ then the equation, whose roots are $\tan A$ and $\tan B$, is

ΔABC में, $\angle C = 90^\circ$ है, तो वह समीकरण बताइए

जिसके मूल $\tan A$ और $\tan B$ हैं।

- a) $abx^2 + c^2x + ab = 0$
b) $abx^2 + c^2x - ab = 0$
c) $abx^2 - c^2x - ab = 0$
d) $abx^2 - c^2x + ab = 0$

13. Assume the earth to be a sphere of radius R . What is the radius of the circle of latitude $40^\circ S$?

पृथ्वी को त्रिज्या R वाला एक गोला मान लें। अक्षांश $40^\circ S$ के वृत्त की त्रिज्या क्या है?

- a) $R \cos 40^\circ$ b) $R \sin 80^\circ$
c) $R \sin 40^\circ$ d) $R \tan 40^\circ$

Concept Lecture - 2

14. The numerical value of $\frac{5}{\sec^2 \theta} + \frac{2}{1 + \cot^2 \theta} + 3 \sin^2 \theta$ is :

$\frac{5}{\sec^2 \theta} + \frac{2}{1 + \cot^2 \theta} + 3 \sin^2 \theta$ का मान बताइए।
a) 5 b) 2 c) 3 d) 4

15. The numerical value of $\left(\frac{1}{\cos \theta} + \frac{1}{\cot \theta}\right) \left(\frac{1}{\cos \theta} - \frac{1}{\cot \theta}\right)$ is

$\left(\frac{1}{\cos \theta} + \frac{1}{\cot \theta}\right) \left(\frac{1}{\cos \theta} - \frac{1}{\cot \theta}\right)$ का मान है:
a) 0 b) -1 c) +1 d) 2

16. If $x = a \sec \theta \cos \phi$, $y = b \sec \theta \sin \phi$, $z = c \tan \theta$, then the value of $\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2}$ is;

अगर $x = a \sec \theta \cos \phi$, $y = b \sec \theta \sin \phi$, $z = c \tan \theta$ है, तो $\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = ?$
a) 1 b) 4 c) 9 d) 0

17. The value of $\frac{1}{\operatorname{cosec} \theta - \cot \theta} - \frac{1}{\sin \theta}$ is

$\frac{1}{\operatorname{cosec} \theta - \cot \theta} - \frac{1}{\sin \theta}$ का मान है:

- a) 1 b) $\cot \theta$
c) $\operatorname{cosec} \theta$ d) $\tan \theta$

18. If $\sin \theta + \sin^2 \theta = 1$, then the value of $\cos^2 \theta + \cos^4 \theta = ?$

अगर $\sin \theta + \sin^2 \theta = 1$, है, तो $\cos^2 \theta + \cos^4 \theta = ?$

- a) 2 b) 4 c) 0 d) 1

19. If $\tan^4 x - \tan^2 x = 1$, then the value of $\sin^4 x + \sin^2 x$ is:

यदि $\tan^4 x - \tan^2 x = 1$, तो $\sin^4 x + \sin^2 x$ का मान है:

- a) $\frac{3}{4}$ b) $\frac{1}{2}$ c) 1 d) $\frac{3}{2}$

20. If $\tan^4 \theta + \tan^2 \theta = 1$ then the value of $\cos^4 \theta + \cos^2 \theta$ is

यदि $\tan^4 \theta + \tan^2 \theta = 1$ हो, तो $\cos^4 \theta + \cos^2 \theta$ का मान क्या होगा?

- a) 2 b) 0 c) 1 d) -1

21. If θ be acute angle satisfying $\cos^2 \theta + \cos^4 \theta = 1$, then the value of $\tan^2 \theta + \tan^4 \theta$ is

अगर θ एक न्यून कोण है जो की $\cos^2 \theta + \cos^4 \theta = 1$ को संतुष्ट करता है, तो $\tan^2 \theta + \tan^4 \theta = ?$

- a) $\frac{3}{2}$ b) 1 c) $\frac{1}{2}$ d) 0

22. If $\operatorname{Cosec} A, \operatorname{Sin} A, \operatorname{Cot} A$ are in geometric progression, then the value of $\operatorname{Tan}^6 A - \operatorname{Tan}^2 A$ is

यदि $\operatorname{Cosec} A, \operatorname{Sin} A, \operatorname{Cot} A$ गुणोत्तर श्रेणी में हैं, तो $\operatorname{Tan}^6 A - \operatorname{Tan}^2 A$ का मान है:

- a) $\frac{1}{2}$ b) 3 c) $\frac{1}{3}$ d) 1

23. If $\tan^2 \alpha = 1 + 2 \tan^2 \beta$ (α, β are positive acute angles), then $\sqrt{2} \cos \alpha - \cos \beta$ is equal to

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अगर $\tan^2 \alpha = 1 + 2 \tan^2 \beta$ (α, β धनात्मक न्यून कोण हैं), तो $\sqrt{2} \cos \alpha - \cos \beta$ का मान:

- a) 0 b) $\sqrt{2}$ c) 1 d) -1

24. What is the value of $\sin A \cos A \tan A + \cos A \sin A \cot A$?

$\sin A \cos A \tan A + \cos A \sin A \cot A$ का मान क्या है ?

- a) $\sin^2 A + \cos A$ b) $\tan^2 A - \sec^2 A$
c) $\sin^2 A + \cot^2 A$ d) $\operatorname{cosec}^2 A - \cot^2 A$

25. If $\frac{(\sin \theta - \operatorname{cosec} \theta)(\cos \theta - \sec \theta)}{\tan^2 \theta - \sin^2 \theta} = r^3$, then $r =$

यदि $\frac{(\sin \theta - \operatorname{cosec} \theta)(\cos \theta - \sec \theta)}{\tan^2 \theta - \sin^2 \theta} = r^3$ है, तो $r = ?$

- a) $\sin \theta \cos \theta$ b) $\tan \theta$
c) $\cot \theta$ d) $\operatorname{cosec} \theta \sec$

26. If $x \sin^3 \theta + y \cos^3 \theta = \sin \theta \cos \theta$ and $x \sin \theta - y \cos \theta = 0$, then the value of $x^2 + y^2$ equals

यदि $x \sin^3 \theta + y \cos^3 \theta = \sin \theta \cos \theta$ हो और $x \sin \theta - y \cos \theta = 0$ हो, तो $x^2 + y^2$ का मान बताए ?

- a) 1 b) $\frac{1}{2}$ c) $\frac{3}{2}$ d) 2

27. If $a^2 \sec^2 x - b^2 \tan^2 x = c^2$ then the value of $\sec^2 x + \tan^2 x$ is equal to (assume $b^2 \neq a^2$)

यदि $a^2 \sec^2 x - b^2 \tan^2 x = c^2$ हैं, तो $\sec^2 x + \tan^2 x$ का मान बताइए (यह मानते हुए कि $b^2 \neq a^2$)

- a) $\frac{b^2 - a^2 + 2c^2}{b^2 + a^2}$ b) $\frac{b^2 + a^2 - 2c^2}{b^2 - a^2}$
c) $\frac{b^2 - a^2 - 2c^2}{b^2 + a^2}$ d) $\frac{b^2 - a^2}{b^2 + a^2 + 2c^2}$

28. Which of the following is/are identity/identities?

1. $\frac{\cos A}{1 - \tan A} + \frac{\sin A}{1 - \cot A} = \sin A + \cos A$
2. $(1 - \sin A - \cos A)^2 = 2(1 - \sin A)(1 + \cos A)$

निम्नलिखित कौन - सी सर्वसमिका / सर्वसमिकाएँ हैं / हैं?

1. $\frac{\cos A}{1 - \tan A} + \frac{\sin A}{1 - \cot A} = \sin A + \cos A$
2. $(1 - \sin A - \cos A)^2 = 2(1 - \sin A)(1 + \cos A)$
a) Only 1 b) only 2
c) both 1 and 2 d) Neither 1 not 2

29. $\frac{(1 + \cos \theta)^2 + \sin^2 \theta}{(\operatorname{cosec}^2 \theta - 1) \sin^2 \theta} = ?$
a) $\cos \theta (1 + \sin \theta)$ b) $2 \cos \theta (1 + \sec \theta)$
c) $\sec \theta (1 + \sin \theta)$ d) $2 \sec \theta (1 + \sec \theta)$

30. The value of $\frac{2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta)}{\cos^4 \theta - \sin^4 \theta - 2 \cos^2 \theta}$ is:
 $\frac{2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta)}{\cos^4 \theta - \sin^4 \theta - 2 \cos^2 \theta}$ का मान क्या है?
a) -1 b) -2 c) 2 d) 1

31. The value of $\frac{(\sin \theta - \cos \theta)(1 + \tan \theta + \cot \theta)}{1 + \sin \theta \cos \theta} = ?$
 $\frac{(\sin \theta - \cos \theta)(1 + \tan \theta + \cot \theta)}{1 + \sin \theta \cos \theta}$ का मान क्या है?
a) $\sec \theta - \operatorname{cosec} \theta$ b) $\operatorname{cosec} \theta - \sec \theta$
c) $\sin \theta + \cos \theta$ d) $\tan \theta - \cot \theta$

32. $\left[\frac{\cos^2 A (\sin A + \cos A)}{\operatorname{cosec}^2 A (\sin A - \cos A)} + \frac{\sin^2 A (\sin A - \cos A)}{\sec^2 A (\sin A + \cos A)} \right] (\sec^2 A - \operatorname{cosec}^2 A) = ?$
a) 1 b) 3 c) 2 d) 4

33. What is the value of $\frac{[1 + 2 \cot^2(90 - x) - 2 \operatorname{cosec}(90 - x) \cot(90 - x)]}{\operatorname{cosec}(90 - x) - \cot(90 - x)}$?
 $\frac{[1 + 2 \cot^2(90 - x) - 2 \operatorname{cosec}(90 - x) \cot(90 - x)]}{\operatorname{cosec}(90 - x) - \cot(90 - x)}$ का मान क्या है?
a) $\cos x + \sin x$ b) $\sin x - \cos x$
c) $\sec x + \tan x$ d) $\sec x - \tan x$

34. $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta}$ is equal to $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta}$ बराबर है:
a) $1 - \tan \theta - \cot \theta$ b) $1 + \tan \theta - \cot \theta$
c) $1 - \tan \theta + \cot \theta$ d) $1 + \tan \theta + \cot \theta$

35. $(\sin \theta + \sec \theta)^2 + (\cos \theta + \operatorname{cosec} \theta)^2$
a) $(1 + \sec \theta \operatorname{cosec} \theta)^2$

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- b) $(2 + \sec\theta \operatorname{cosec}\theta)^2$
 c) $(1 + \sin\theta \operatorname{cosec}\theta)^2$
 d) $(1 + \sin\theta \tan\theta)^2$

36. If $\operatorname{cosec}^4\alpha = 17 + \cot^4\alpha$, then find $\sin\alpha = ?$
 यदि $\operatorname{cosec}^4\alpha = 17 + \cot^4\alpha$ है, तो $\sin\alpha$ ज्ञात करो
 |
 a) 0 b) 1 c) $\frac{1}{3}$ d) $\frac{2}{3}$

37. If $\tan\theta + \sin\theta = m$, $\tan\theta - \sin\theta = n$, Find the value of $m^2 - n^2$
 यदि $\tan\theta + \sin\theta = m$, $\tan\theta - \sin\theta = n$, हो तो $m^2 - n^2$ का मान बताओ।
 a) $2\sqrt{mn}$ b) $4\sqrt{mn}$
 c) $m - n$ d) $2mn$

Concept Lecture – 3

38. $\frac{\cos\alpha}{\sin\beta} = n$ and $\frac{\cos\alpha}{\cos\beta} = m$, then the value of $\cos^2\beta$ is
 अगर $\frac{\cos\alpha}{\sin\beta} = n$ और $\frac{\cos\alpha}{\cos\beta} = m$ है, तो $\cos^2\beta = ?$
 a) $\frac{m^2-1}{n^2-1}$ b) $\frac{m^2-3}{n^2-4}$ c) $\frac{m^2+3}{n^2+3}$ d) $\frac{n^2}{m^2+n^2}$

39. If $\frac{\cos\alpha}{\cos\beta} = a$ and $\frac{\sin\alpha}{\sin\beta} = b$ then the value of $\sin^2\beta$ in terms of a and b is
 अगर $\frac{\cos\alpha}{\cos\beta} = a$ और $\frac{\sin\alpha}{\sin\beta} = b$ है, तो $\sin^2\beta$ का मान a और b के रूप में:
 a) $\frac{a^2+1}{a^2-b^2}$ b) $\frac{a^2-b^2}{a^2+b^2}$ c) $\frac{a^2-1}{a^2-b^2}$ d) $\frac{a^2-1}{a^2+b^2}$

40. If $\tan A = n \tan B$ and $\sin A = m \sin B$, then the value of $\cos^2 A$ is
 अगर $\tan A = n \tan B$ और $\sin A = m \sin B$ है, तो $\cos^2 A = ?$
 a) $\frac{m^2+1}{n^2+1}$ b) $\frac{m^2+1}{n^2-1}$ c) $\frac{m^2-1}{n^2-1}$ d) $\frac{m^2-1}{n^2+1}$

41. If $\sin A + \sin^2 A = 1$, then find the value of $\cos^{12} A + \cos^{10} A + 3\cos^8 A + \cos^6 A + \cos^4 A + \cos^2 A$.

यदि $\sin A + \sin^2 A = 1$ है, तो $\cos^{12} A + \cos^{10} A + 3\cos^8 A + \cos^6 A + \cos^4 A + \cos^2 A$ का मान ज्ञात करो।
 a) -1 b) 5 c) 2 d) 1

42. If $\cos A + \cos^2 A = 1$, then find the value of $\sin^{12} A + 3\sin^{10} A + 3\sin^8 A + \sin^6 A + \sin^4 A + \sin^2 A$.

यदि $\cos A + \cos^2 A = 1$ है, तो $\sin^{12} A + 3\sin^{10} A + 3\sin^8 A + \sin^6 A + \sin^4 A + \sin^2 A$ का मान ज्ञात करो।
 a) -1 b) 5 c) 2 d) 1

43. If $\cos A + \cos^2 A = 1$ and $a \sin^{12} A + b \sin^{10} A + c \sin^8 A + d \sin^6 A - 1 = 0$.

Find the value of $\frac{a+b}{c+d}$
 यदि $\cos A + \cos^2 A = 1$ और $a \sin^{12} A + b \sin^{10} A + c \sin^8 A + d \sin^6 A - 1 = 0$ है, तो $\frac{a+b}{c+d}$ का मान ज्ञात करो।
 a) 4 b) 3 c) 6 d) 1

44. The value of $\frac{\sec^6\theta - \tan^6\theta - 3\sec^2\theta \tan^2\theta + 1}{\cos^4\theta - \sin^4\theta + 2\sin^2\theta + 2}$
 $\frac{\sec^6\theta - \tan^6\theta - 3\sec^2\theta \tan^2\theta + 1}{\cos^4\theta - \sin^4\theta + 2\sin^2\theta + 2}$ का मान :

- a) $\frac{3}{4}$ b) $\frac{2}{3}$ c) $\frac{1}{2}$ d) $\frac{4}{3}$

45. $(1 + \sin\alpha)(1 + \sin\beta)(1 + \sin\gamma) = (1 - \sin\alpha)(1 - \sin\beta)(1 - \sin\gamma) = ?$

- a) $\pm \cos\alpha \cdot \cos\beta \cdot \cos\gamma$
 b) $\pm \sin\alpha \cdot \sin\beta \cdot \sin\gamma$
 c) $\pm \sin\alpha \cdot \cos\beta \cdot \sec\gamma$
 d) $\pm \sin\alpha \cdot \sin\beta \cdot \cos\gamma$

46. The value of $\left[\frac{\sqrt{3}+2\sin P}{1-2\cos P}\right]^3 + \left[\frac{1+2\cos P}{\sqrt{3}-2\sin P}\right]^3$ is:

$\left[\frac{\sqrt{3}+2\sin P}{1-2\cos P}\right]^3 + \left[\frac{1+2\cos P}{\sqrt{3}-2\sin P}\right]^3$ का मान है:
 a) 0 b) $\sin P \cos P$

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c) $2\sin P \cos P$ d) 1

47. If $P = a\cos^3 x + 3a \cos x \cdot \sin^2 x$ and $Q = a\sin^3 x + 3a\cos^2 x \cdot \sin x$, then $(P + Q)^{\frac{2}{3}} + (P - Q)^{\frac{2}{3}} = ?$

यदि $P = a\cos^3 x + 3a \cos x \cdot \sin^2 x$ और $Q = a\sin^3 x + 3a\cos^2 x \cdot \sin x$ है, तो $(P + Q)^{\frac{2}{3}} + (P - Q)^{\frac{2}{3}} = ?$

a) $2a^{\frac{2}{3}}$ b) $a^{\frac{2}{3}}$ c) $2a^{\frac{1}{3}}$ d) $a^{\frac{1}{3}}$

48. What is $(\sin^2 x - \cos^2 x)(1 - \sin^2 x \cos^2 x)$ equal to?

$(\sin^2 x - \cos^2 x)(1 - \sin^2 x \cos^2 x)$ किसके बराबर है ?

a) $\sin^4 x - \cos^4 x$ b) $\sin^6 x - \cos^6 x$
c) $\cos^8 x - \sin^8 x$ d) $\sin^8 x - \cos^8 x$

49. If $T_n = \sin^n \theta + \cos^n \theta$ then $\frac{T_3 - T_5}{T_1} = ?$

यदि $T_n = \sin^n \theta + \cos^n \theta$ है, तो $\frac{T_3 - T_5}{T_1} = ?$

a) $\sin \theta \cdot \cos \theta$ b) $\sin^2 \theta \cdot \cos^2 \theta$
c) $\sin^2 \theta \cdot \cos \theta$ d) $\sin \theta \cdot \cos^2 \theta$

50. If $\cos A = \tan B$, $\cos B = \tan C$ and $\cos C = \tan A$, then $\sin A$ is equal to:

यदि $\cos A = \tan B$, $\cos B = \tan C$ और $\cos C = \tan A$ है, तो $\sin A = ?$

a) $\frac{\sqrt{5}+1}{2}$ b) $\frac{\sqrt{5}-1}{2}$
c) $\frac{\sqrt{3}-1}{4}$ d) $\frac{\sqrt{3}-1}{2}$

51. If $\sin \theta + \sin^2 \theta + \sin^3 \theta = 1$, find $\cos^6 \theta - 4\cos^4 \theta + 8\cos^2 \theta$.

यदि $\sin \theta + \sin^2 \theta + \sin^3 \theta = 1$ है, तो $\cos^6 \theta - 4\cos^4 \theta + 8\cos^2 \theta$ ज्ञात करो |

a) 4 b) 6 c) 0 d) 8

52. If $\tan \theta + \cot \theta = \frac{4}{\sqrt{3}}$ where $0 < \theta < \frac{\pi}{2}$, then $\sin \theta + \cos \theta$ is equal to

यदि $\tan \theta + \cot \theta = \frac{4}{\sqrt{3}}$ है जहां $0 < \theta < \frac{\pi}{2}$ है, तो $\sin \theta + \cos \theta = ?$

a) 1 b) $\frac{\sqrt{3}-1}{2}$ c) $\frac{\sqrt{3}+1}{2}$ d) $\sqrt{2}$

53. If $\tan \theta - \cot \theta = \frac{119}{60}$ for $0^\circ < \theta < \frac{\pi}{2}$, then the value of $\sin \theta + \cos \theta$.

यदि $\tan \theta - \cot \theta = \frac{119}{60}$ और $0^\circ < \theta < \frac{\pi}{2}$ है तो, $\sin \theta + \cos \theta$ का मान ज्ञात करो।

a) $\frac{17}{13}$ b) $\frac{21}{13}$ c) $\frac{19}{13}$ d) $\frac{23}{13}$

Mental Test- 1

54. If $\sec^2 \theta + \tan^2 \theta = \frac{7}{12}$, then $\sec^4 \theta - \tan^4 \theta = ?$

अगर $\sec^2 \theta + \tan^2 \theta = \frac{7}{12}$ है, तो $\sec^4 \theta - \tan^4 \theta = ?$

a) $\frac{7}{12}$ b) $\frac{1}{2}$ c) 1 d) 0

55. The numerical value of $\frac{1}{1+\cot^2 \theta} + \frac{3}{1+\tan^2 \theta} + 2 \sin^2 \theta$ is

$\frac{1}{1+\cot^2 \theta} + \frac{3}{1+\tan^2 \theta} + 2 \sin^2 \theta$ का मान क्या होगा?
a) 2 b) 5 c) 6 d) 3

56. The value of $\frac{4}{1+\tan^2 \alpha} + \frac{1}{1+\cot^2 \alpha} + 3 \sin^2 \alpha$ is

$\frac{4}{1+\tan^2 \alpha} + \frac{1}{1+\cot^2 \alpha} + 3 \sin^2 \alpha$ का मान क्या है?
a) 4 b) -1 c) 2 d) 3

57. The numerical value of $\frac{9}{\operatorname{cosec}^2 \theta} + 4 \cos^2 \theta + \frac{5}{1+\tan^2 \theta}$

$\frac{9}{\operatorname{cosec}^2 \theta} + 4 \cos^2 \theta + \frac{5}{1+\tan^2 \theta}$ का मान का है।
a) 7 b) 9 c) 4 d) 5

58. If $x = a(\sin \theta + \cos \theta)$, $y = b(\sin \theta - \cos \theta)$ then the value of $\frac{x^2}{a^2} + \frac{y^2}{b^2}$ is

अगर $x = a(\sin \theta + \cos \theta)$, $y = b(\sin \theta - \cos \theta)$ है, तो $\frac{x^2}{a^2} + \frac{y^2}{b^2}$ का मान:

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- a) 0 b) 1 c) 2 d) -2

59. If $x = a \sec \alpha \cos \beta$, $y = b \sec \alpha \sin \beta$, $z = c \tan \alpha$, then the value of $\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2}$ is

अगर $x = a \sec \alpha \cos \beta$, $y = b \sec \alpha \sin \beta$, $z = c \tan \alpha$ है, तो $\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = ?$

- a) 2 b) 0 c) 1 d) -1

60. $\sec^6 \theta - \tan^6 \theta - 3 \tan^2 \theta \cdot \sec^2 \theta = ?$

- a) 1 b) 3 c) 2 d) -1

61. If $\cos^2 \theta - \sin^2 \theta = \frac{1}{3}$, where $0 \leq \theta < \frac{\pi}{2}$ then the value of $\cos^4 \theta - \sin^4 \theta$ is

अगर $\cos^2 \theta - \sin^2 \theta = \frac{1}{3}$, जहाँ $0 \leq \theta < \frac{\pi}{2}$ है, तो $\cos^4 \theta - \sin^4 \theta = ?$

- a) $\frac{1}{3}$ b) $\frac{2}{3}$ c) $\frac{1}{9}$ d) $\frac{2}{9}$

62. $\frac{\sin A - \sin B}{\cos A + \cos B} + \frac{\cos A - \cos B}{\sin A + \sin B}$

- a) 1 b) 0 c) 3 d) 2

63. If $\tan \theta + \cot \theta = 5$, then $\tan^2 \theta + \cot^2 \theta$ is

अगर $\tan \theta + \cot \theta = 5$ है, तो $\tan^2 \theta + \cot^2 \theta = ?$

- a) 23 b) 24 c) 25 d) 26

64. If $\sin A + \operatorname{cosec} A = 3$, then find the value of $\frac{\sin^4 A + 1}{\sin^2 A}$.

यदि $\sin A + \operatorname{cosec} A = 3$ है, तो $\frac{\sin^4 A + 1}{\sin^2 A}$ का मान ज्ञात करो।

- a) 1 b) 0 c) 7 d) 11

65. If $x = a \sec^n \theta$ and $y = b \tan^n \theta$, then

यदि $x = a \sec^n \theta$ और $y = b \tan^n \theta$ है, तो

- a) $\left(\frac{x}{a}\right)^{\frac{1}{n}} - \left(\frac{y}{b}\right)^{\frac{1}{n}} = 1$ b) $\left(\frac{x}{a}\right)^{\frac{2}{n}} - \left(\frac{y}{b}\right)^{\frac{2}{n}} = 1$
c) $\left(\frac{x}{a}\right)^2 - \left(\frac{y}{b}\right)^2 = 1$ d) None of these

66. Value of the expression $\frac{1+2\sin 60^\circ \cos 60^\circ}{\sin 60^\circ + \cos 60^\circ} +$

$$\frac{1-2\sin 60^\circ \cos 60^\circ}{\sin 60^\circ - \cos 60^\circ} = ?$$

$\frac{1+2\sin 60^\circ \cos 60^\circ}{\sin 60^\circ + \cos 60^\circ} + \frac{1-2\sin 60^\circ \cos 60^\circ}{\sin 60^\circ - \cos 60^\circ}$ का मान है:

- a) $\sqrt{3}$ b) $2\sqrt{3}$ c) 0 d) 2

Concept Lecture - 4

67. If $\sec \theta + \tan \theta = 2$, then the value of $\sec \theta$ is

अगर $\sec \theta + \tan \theta = 2$ है, तो $\sec \theta$ का मान:

- a) $\frac{4}{5}$ b) 5 c) $\frac{5}{4}$ d) $\sqrt{2}$

68. If $\sec \theta + \tan \theta = 5$ then the value of $\frac{\tan \theta + 1}{\tan \theta - 1}$

अगर $\sec \theta + \tan \theta = 5$ है, तो $\frac{\tan \theta + 1}{\tan \theta - 1} = ?$

- a) $\frac{11}{7}$ b) $\frac{13}{7}$ c) $\frac{15}{7}$ d) $\frac{17}{7}$

69. If A is an acute angle and $\cot A + \operatorname{cosec} A = 3$ then the value of $\sin A$ is

अगर A एक न्यून कोण है और $\cot A + \operatorname{cosec} A = 3$ है, तो $\sin A = ?$

- a) 1 b) $\frac{4}{5}$ c) $\frac{3}{5}$ d) 0

70. If $\tan \theta + \sec \theta = \frac{x-2}{x+2}$, then what is the value of $\cos \theta$?

यदि $\tan \theta + \sec \theta = \frac{x-2}{x+2}$ है, तो $\cos \theta$ का मान क्या है?

- a) $\frac{x^2-1}{x^2+1}$ b) $\frac{2x^2-4}{2x^2+4}$ c) $\frac{x^2-4}{x^2+4}$ d) $\frac{x^2-2}{x^2+2}$

71. If $\operatorname{cosec} \theta - \cot \theta = 3$ the value of $\cos \theta$ is

अगर $\operatorname{cosec} \theta - \cot \theta = 3$ है, तो $\cos \theta$ का मान:

- a) $\frac{4}{5}$ b) $-\frac{4}{5}$ c) $\frac{3}{5}$ d) $-\frac{3}{5}$

72. If $\sec \theta + \tan \theta = -\frac{2}{3}$ then the value of $\sin \theta + \cos \theta$ is

अगर $\sec \theta + \tan \theta = -\frac{2}{3}$ है, तो $\sin \theta + \cos \theta$ का मान:

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a) $\frac{7}{13}$ b) $-\frac{7}{13}$ c) $\frac{17}{13}$ d) $-\frac{17}{13}$

c) $2 \sin A$ d) $2 \cos A$

73. If $\sec \theta + \tan \theta = m (> 1)$, then the value of $\sin \theta$ is ($0^\circ < \theta < 90^\circ$)

यदि $\sec \theta + \tan \theta = m (> 1)$, हो, तो $\sin \theta$ का मान ज्ञात कीजिए ? ($0^\circ < \theta < 90^\circ$)

a) $\frac{1-m^2}{1+m^2}$ b) $\frac{m^2-1}{m^2+1}$ c) $\frac{m^2-1}{m^2+1}$ d) $\frac{1+m^2}{1-m^2}$

78. If $\frac{\sin \theta}{1+\cos \theta} + \frac{1+\cos \theta}{\sin \theta} = \frac{4}{\sqrt{3}}$, $0^\circ < \theta < 90^\circ$, then the value of $(\tan \theta + \sec \theta)^{-1}$ is:

यदि $\frac{\sin \theta}{1+\cos \theta} + \frac{1+\cos \theta}{\sin \theta} = \frac{4}{\sqrt{3}}$, $0^\circ < \theta < 90^\circ$, है, तो $(\tan \theta + \sec \theta)^{-1}$ का मान क्या होगा?

a) $2 - \sqrt{3}$ b) $3 - \sqrt{2}$
c) $2 + \sqrt{3}$ d) $3 + \sqrt{2}$

74. Which of the following is/are identity/identities?

1. $\sqrt{\frac{1-\cos \theta}{1+\cos \theta}} = \operatorname{cosec} \theta - \cot \theta$

2. $\sqrt{\frac{1+\cos \theta}{1-\cos \theta}} = \operatorname{cosec} \theta + \cot \theta$

निम्नलिखित कौन - सी सर्वसमिका / सर्वसमिकाएँ हैं / हैं?

1. $\sqrt{\frac{1-\cos \theta}{1+\cos \theta}} = \operatorname{cosec} \theta - \cot \theta$

2. $\sqrt{\frac{1+\cos \theta}{1-\cos \theta}} = \operatorname{cosec} \theta + \cot \theta$

a) Only 1 b) Only 2
c) Both 1 and 2 d) Neither 1 nor 2

79. $(\sec \theta - \tan \theta)^2 (1 + \sin \theta)^2 \div \sin^2 \theta = ?$

a) $\operatorname{cosec}^2 \theta$ b) $\cot^2 \theta$
c) $\sec \theta$ d) $\cos^2 \theta$

80. The value of $\sqrt{\frac{\operatorname{cosec} \theta - \cot \theta}{\operatorname{cosec} \theta + \cot \theta}} \div \frac{\sin \theta}{1+\cos \theta}$ is equal to:

$\sqrt{\frac{\operatorname{cosec} \theta - \cot \theta}{\operatorname{cosec} \theta + \cot \theta}} \div \frac{\sin \theta}{1+\cos \theta}$ का मान निम्नलिखित में से किसके बराबर है?

a) $\operatorname{cosec} \theta$ b) $\frac{1}{2}$
c) $\sec \theta$ d) 1

75. If $p = \sqrt{\frac{1-\sin x}{1+\sin x}}$, $q = \frac{1-\sin x}{\cos x}$ and $r = \frac{\cos x}{1+\sin x}$, then which of the following is/are correct?

यदि $p = \sqrt{\frac{1-\sin x}{1+\sin x}}$, $q = \frac{1-\sin x}{\cos x}$ और $r = \frac{\cos x}{1+\sin x}$ है, तो निम्न में से कौन सा/से ठीक हैं?

1. $p = q = r$ 2. $p^2 = qr$
a) Only 1 b) only 2
c) both 1 and 2 d) Neither 1 not 2

81. The expression of $\frac{\operatorname{Cosec} \theta + \cot \theta + 1}{\operatorname{Cosec} \theta - \cot \theta + 1}$ is equal to

व्यंजक $\frac{\operatorname{Cosec} \theta + \cot \theta + 1}{\operatorname{Cosec} \theta - \cot \theta + 1}$ किसके बराबर होगा ?

a) $\frac{1+\cos \theta}{\sin \theta}$ b) $\frac{1-\cos \theta}{\sin \theta}$
c) $\frac{\cot \theta + 1}{\operatorname{Cosec} \theta}$ d) $\frac{\cot \theta - 1}{\operatorname{Cosec} \theta}$

82. $\frac{\tan A - \sec A + 1}{\tan A + \sec A - 1} = ?$

a) $\frac{1+\sin A}{\cos A}$ b) $\frac{1-\sin A}{\cos A}$
c) $\frac{1+\cos A}{\sin A}$ d) $\frac{1-\cos A}{\sin A}$

76. What is the value of $\frac{\sin \theta}{1+\cos \theta} + \frac{1+\cos \theta}{\sin \theta}$?

$\frac{\sin \theta}{1+\cos \theta} + \frac{1+\cos \theta}{\sin \theta}$ का मान क्या है ?

a) $2 \operatorname{cosec} \theta$ b) $2 \sec \theta$
c) $\sec \theta$ d) $\operatorname{cosec} \theta$

83. If $(\sec \alpha + \tan \alpha)(\sec \beta + \tan \beta)(\sec \gamma + \tan \gamma) = (\sec \alpha - \tan \alpha)(\sec \beta - \tan \beta)(\sec \gamma - \tan \gamma)$, then each of the side is equal to

यदि $(\sec \alpha + \tan \alpha)(\sec \beta + \tan \beta)(\sec \gamma + \tan \gamma) = (\sec \alpha - \tan \alpha)(\sec \beta - \tan \beta)(\sec \gamma - \tan \gamma)$ है, तो प्रत्येक पक्ष का मान है-

a) ± 1 b) -1 c) $+1$ d) 4

77. $\frac{\sin A}{1+\cos A} + \frac{\sin A}{1-\cos A}$ is ($0^\circ < A < 90^\circ$)

a) $2 \operatorname{cosec} A$ b) $2 \sec A$

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84. For $0^\circ < \theta < 90^\circ$, if $\frac{\sec\theta(1-\sin\theta)(\sec\theta+\tan\theta)}{(\sec\theta-\tan\theta)^2} = \frac{1+k}{1-k}$, then k is equal to:

$0^\circ < \theta < 90^\circ$, यदि $\frac{\sec\theta(1-\sin\theta)(\sec\theta+\tan\theta)}{(\sec\theta-\tan\theta)^2} = \frac{1+k}{1-k}$

है, तो k बराबर है:

- a) cosec θ b) cos θ
c) sec θ d) sin θ

85. If $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} \times \sqrt{\frac{\operatorname{cosec}\theta-\cot\theta}{\operatorname{cosec}\theta+\cot\theta}} = \frac{1-r}{1+r}$, then the value of r is:

यदि $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} \times \sqrt{\frac{\operatorname{cosec}\theta-\cot\theta}{\operatorname{cosec}\theta+\cot\theta}} = \frac{1-r}{1+r}$ है, तो r का मान है:

- a) sin θ b) cosec θ
c) sec θ d) cos θ

Concept Lecture – 5

86. If $x = a \sin \theta - b \cos \theta$, $y = a \cos \theta + b \sin \theta$, then which of the following is true?
अगर $x = a \sin \theta - b \cos \theta$, $y = a \cos \theta + b \sin \theta$ है तो निम्न में से कौनसा सही है?

- a) $\frac{x^2}{y^2} + \frac{a^2}{b^2} = 1$ b) $x^2 + y^2 = a^2 - b^2$
c) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ d) $x^2 + y^2 = a^2 + b^2$

87. The elimination of θ from $x \cos \theta - y \sin \theta = 2$ and $x \sin \theta + y \cos \theta = 4$ will give

\[समीकरण $x \cos \theta - y \sin \theta = 2$ and $x \sin \theta + y \cos \theta = 4$ में से अगर θ को खत्म करने पर बचेगा-
a) $x^2 + y^2 = 20$ b) $3x^2 + y^2 = 20$
c) $x^2 - y^2 = 20$ d) $3x^2 - y^2 = 10$

88. If $x = a \sin \theta - b \cos \theta$, $y = a \cos \theta + b \sin \theta$, then which of the following is true?

अगर $x = a \sin \theta - b \cos \theta$, $y = a \cos \theta + b \sin \theta$ है तो निम्न में से कौनसा सही है?
a) $\frac{x^2}{y^2} + \frac{a^2}{b^2} = 1$ b) $x^2 + y^2 = a^2 - b^2$

c) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

d) $x^2 + y^2 = a^2 + b^2$

89. The elimination of θ from $x \cos \theta - y \sin \theta = 2$ and $x \sin \theta + y \cos \theta = 4$ will give

समीकरण $x \cos \theta - y \sin \theta = 2$ and $x \sin \theta + y \cos \theta = 4$ में से अगर θ को खत्म करने पर बचेगा-
a) $x^2 + y^2 = 20$ b) $3x^2 + y^2 = 20$
c) $x^2 - y^2 = 20$ d) $3x^2 - y^2 = 10$

90. If $a \sin \theta + b \cos \theta = c$, then $a \cos \theta - b \sin \theta$ is equal to

अगर $a \sin \theta + b \cos \theta = c$ है, तो $a \cos \theta - b \sin \theta = ?$
a) $\pm \sqrt{a+b-c}$ b) $\pm \sqrt{a^2 + b^2 + c^2}$
c) $\pm \sqrt{a^2 + b^2 - c^2}$ d) $\pm \sqrt{c^2 + a^2 - b^2}$

91. If $\frac{x}{a} \cos \theta + \frac{y}{b} \sin \theta = 1$ and $\frac{x}{a} \sin \theta - \frac{y}{b} \cos \theta = 1$, then

यदि $\frac{x}{a} \cos \theta + \frac{y}{b} \sin \theta = 1$ और $\frac{x}{a} \sin \theta - \frac{y}{b} \cos \theta = 1$ है, तो
a) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 0$ b) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
c) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = -1$ d) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 2$

92. If $\frac{x}{a} - \frac{y}{b} \tan \theta = 1$ and $\frac{x}{a} \tan \theta + \frac{y}{b} = 1$ then the value of $\frac{x^2}{a^2} + \frac{y^2}{b^2}$ is

यदि $\frac{x}{a} - \frac{y}{b} \tan \theta = 1$ और $\frac{x}{a} \tan \theta + \frac{y}{b} = 1$ है, तो $\frac{x^2}{a^2} + \frac{y^2}{b^2}$ का मान है |
a) $2 \sec^2 \theta$ b) $\sec^2 \theta$
c) $\cos^2 \theta$ d) $2 \cos^2 \theta$

93. If $p \sec \theta - q \tan \theta = 10$ and $p \tan \theta - q \sec \theta = 8$. Find $p^2 - q^2 = ?$

यदि $p \sec \theta - q \tan \theta = 10$ और $p \tan \theta - q \sec \theta = 8$ है, $p^2 - q^2$ ज्ञात करो |
a) 36 b) 40 c) 32 d) 25

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94. If $3\operatorname{cosec}\theta - 7\cot\theta = 3$, then find $3\cot\theta - 7\operatorname{cosec}\theta = ?$

यदि $3\operatorname{cosec}\theta - 7\cot\theta = 3$ है, तो $3\cot\theta - 7\operatorname{cosec}\theta$ ज्ञात करो |

- a) 5 b) 3 c) 4 d) 7

95. If $5\cos\theta + 12\sin\theta = 13$, $0^\circ < \theta < 90^\circ$, then the value of $\sin\theta$ is

अगर $5\cos\theta + 12\sin\theta = 13$ है और $0^\circ < \theta < 90^\circ$ है तो $\sin\theta = ?$

- a) $\frac{5}{13}$ b) $-\frac{12}{13}$ c) $\frac{6}{13}$ d) $\frac{12}{13}$

96. $7\operatorname{cosec}\theta + 24\sec\theta = 25\operatorname{cosec}\theta\sec\theta$, then $\cot\theta = ?$

$7\operatorname{cosec}\theta + 24\sec\theta = 25\operatorname{cosec}\theta\sec\theta$ है, तो $\cot\theta = ?$

- a) $\frac{25}{24}$ b) $\frac{7}{24}$ c) $\frac{24}{25}$ d) $\frac{24}{7}$

97. If $(a^2 - b^2)\sin\theta + 2ab\cos\theta = a^2 + b^2$, then $\tan\theta = ?$

यदि $(a^2 - b^2)\sin\theta + 2ab\cos\theta = a^2 + b^2$ हो, तो $\tan\theta = ?$

- a) $\frac{2ab}{a^2 - b^2}$ b) $\frac{a^2 - b^2}{2ab}$ c) $\frac{ab}{a^2 - b^2}$ d) $\frac{a^2 - b^2}{ab}$

98. If $x\sin\theta - y\cos\theta = \sqrt{x^2 + y^2}$ and $\frac{\cos^2\theta}{a^2} + \frac{\sin^2\theta}{b^2} = \frac{1}{x^2 + y^2}$. Then

यदि $x\sin\theta - y\cos\theta = \sqrt{x^2 + y^2}$ और $\frac{\cos^2\theta}{a^2} + \frac{\sin^2\theta}{b^2} = \frac{1}{x^2 + y^2}$ है तो

- a) $\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$ b) $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$
c) $\frac{x^2}{b^2} - \frac{y^2}{a^2} = 1$ d) $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

99. If $15\sin^3\alpha + 20\cos^3\alpha = 12$. Find $10\sin\alpha + 15\cos\alpha$.

यदि $15\sin^3\alpha + 20\cos^3\alpha = 12$ है, $10\sin\alpha + 15\cos\alpha$ ज्ञात करो |

- a) 12 b) 15 c) 17 d) 20

100. If $10\sin^4\alpha + 15\cos^4\alpha = 6$ find $27\operatorname{cosec}^6\alpha + 8\sec^6\alpha$.

यदि $10\sin^4\alpha + 15\cos^4\alpha = 6$ है, $27\operatorname{cosec}^6\alpha + 8\sec^6\alpha$ ज्ञात करो |

- a) 125 b) 500 c) 250 d) 200

101. If $\frac{\sin^4 A}{a} + \frac{\cos^4 A}{b} = \frac{1}{a+b}$, then $\frac{\sin^8 A}{a^3} + \frac{\cos^8 A}{b^3} = ?$

यदि $\frac{\sin^4 A}{a} + \frac{\cos^4 A}{b} = \frac{1}{a+b}$ है, तो $\frac{\sin^8 A}{a^3} + \frac{\cos^8 A}{b^3} = ?$

- a) $\frac{1}{(a+b)^3}$ b) $\frac{a^2 b^2}{(a+b)^2}$
c) $\frac{a^3 b^3}{(a+b)^3}$ d) $\frac{ab}{a+b}$

Concept Lecture – 6

102. The value of $\cos 1^\circ \cos 2^\circ \cos 3^\circ \dots \dots \dots \cos 178^\circ \cos 179^\circ$ is

$\cos 1^\circ \cos 2^\circ \cos 3^\circ \dots \dots \dots \cos 178^\circ \cos 179^\circ$ का मान:

- a) 0 b) $\frac{1}{2}$ c) 1 d) $\frac{1}{\sqrt{2}}$

103. If $x\sin 60^\circ \tan 30^\circ - \tan^2 45^\circ = \operatorname{cosec} 60^\circ \cot 30^\circ - \sec^2 45^\circ$ then $x = ?$

अगर $x\sin 60^\circ \tan 30^\circ - \tan^2 45^\circ = \operatorname{cosec} 60^\circ \cot 30^\circ - \sec^2 45^\circ$ है, तो $x = ?$

- a) 2 b) -2 c) 6 d) -4

104. If $\frac{x - x\tan^2 30^\circ}{1 + \tan^2 30^\circ} = \sin^2 30^\circ + 4\cot^2 45^\circ - \sec^2 60^\circ$ then value of x is

अगर $\frac{x - x\tan^2 30^\circ}{1 + \tan^2 30^\circ} = \sin^2 30^\circ + 4\cot^2 45^\circ - \sec^2 60^\circ$ है, तो $x = ?$

- a) $\frac{1}{4}$ b) $\frac{1}{\sqrt{3}}$ c) $\frac{1}{2}$ d) $\frac{1}{5}$

105. The value of $\frac{1}{\sqrt{2}}\sin\frac{\pi}{6}\cos\frac{\pi}{4} - \cot\frac{\pi}{3}\sec\frac{\pi}{6} + \frac{5\tan\frac{\pi}{4}}{12\sin\frac{\pi}{2}}$ is equal to

$\frac{1}{\sqrt{2}}\sin\frac{\pi}{6}\cos\frac{\pi}{4} - \cot\frac{\pi}{3}\sec\frac{\pi}{6} + \frac{5\tan\frac{\pi}{4}}{12\sin\frac{\pi}{2}}$ का मान:

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- a) 0 b) 1 c) 2 d) $\frac{3}{2}$
106. If $\sin(A - B) = \frac{1}{2}$ and $\cos(A + B) = \frac{1}{2}$ where $A > B > 0$ and $A + B$ is an acute angle, then the value of B is
अगर $\sin(A - B) = \frac{1}{2}$ और $\cos(A + B) = \frac{1}{2}$ जहाँ $A > B > 0$ और $A + B$ एक न्यून कोण है, तो B का मान पता करो।
a) $\frac{\pi}{6}$ b) $\frac{\pi}{12}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{2}$
107. If θ is positive acute angle and $3(\sec^2 \theta + \tan^2 \theta) = 5$, then the value of $\cos 2\theta$ is
अगर θ एक धनात्मक न्यून कोण है और $3(\sec^2 \theta + \tan^2 \theta) = 5$ है, तो $\cos 2\theta$ का मान:
a) $\frac{1}{2}$ b) $\frac{\sqrt{3}}{2}$ c) $\frac{1}{\sqrt{2}}$ d) 1
108. If $r \sin \theta = 1$, $r \cos \theta = \sqrt{3}$, then the value of $(\sqrt{3} \sec \theta + 1)$ is
अगर $r \sin \theta = 1$, $r \cos \theta = \sqrt{3}$ है, तो $(\sqrt{3} \sec \theta + 1) = ?$
a) $\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) 1 d) 3
109. If $r \sin \theta = \frac{7}{2}$ and $r \cos \theta = \frac{7\sqrt{3}}{2}$, then the value of r is
अगर $r \sin \theta = \frac{7}{2}$ और $r \cos \theta = \frac{7\sqrt{3}}{2}$ है, तो r का मान:
a) 4 b) 3 c) 5 d) 7
110. If $(r \cos \theta - \sqrt{3})^2 + (r \sin \theta - 1)^2 = 0$ then the value of $\frac{r \tan \theta + \sec \theta}{r \sec \theta + \tan \theta}$ is equal to
अगर $(r \cos \theta - \sqrt{3})^2 + (r \sin \theta - 1)^2 = 0$ है, तो $\frac{r \tan \theta + \sec \theta}{r \sec \theta + \tan \theta} = ?$
a) $\frac{4}{5}$ b) $\frac{3}{5}$ c) $\frac{\sqrt{3}}{4}$ d) $\frac{\sqrt{5}}{4}$
111. If $117 \cos^2 A + 129 \sin^2 A = 120$ and $170 \cos^2 B + 158 \sin^2 B = 161$, then the value of $\operatorname{cosec}^2 A \sec^2 B$ is:
यदि $117 \cos^2 A + 129 \sin^2 A = 120$ और $170 \cos^2 B + 158 \sin^2 B = 161$ तो $\operatorname{cosec}^2 A \sec^2 B$ का मान है:
a) 1 b) 9 c) 4 d) 16
112. If $\tan \theta - \cot \theta = 0$ and θ is positive acute angle, then the value of $\frac{\tan(\theta+15^\circ)}{\tan(\theta-15^\circ)}$ is
अगर $\tan \theta - \cot \theta = 0$ और θ एक धनात्मक न्यूनकोण है, तो $\frac{\tan(\theta+15^\circ)}{\tan(\theta-15^\circ)} = ?$
a) 3 b) $\frac{1}{\sqrt{3}}$ c) $\frac{1}{3}$ d) $\sqrt{3}$
113. If $\frac{(1+\sin \theta - \cos \theta)}{(1+\sin \theta + \cos \theta)} + \frac{(1+\sin \theta + \cos \theta)}{(1+\sin \theta - \cos \theta)} = 4$ then which of the following values will be suitable for θ ?
यदि $\frac{(1+\sin \theta - \cos \theta)}{(1+\sin \theta + \cos \theta)} + \frac{(1+\sin \theta + \cos \theta)}{(1+\sin \theta - \cos \theta)} = 4$ तो निम्नलिखित में से कौन सा मान θ के लिए सही रहेगा?
a) 90° b) 60° c) 45° d) 30°
114. The value of $152(\sin 30^\circ + 2\cos^2 45^\circ + 3\sin 30^\circ + 4\cos^2 45^\circ + \dots + 17\sin 30^\circ + 18\cos^2 45^\circ)$ is
a) an integer but not perfect square
b) a rational number but not an integer
c) a perfect square of an integer
d) irrational
 $152(\sin 30^\circ + 2\cos^2 45^\circ + 3\sin 30^\circ + 4\cos^2 45^\circ + \dots + 17\sin 30^\circ + 18\cos^2 45^\circ)$ का मान:
a) एक पूर्णांक पर पूर्ण वर्ग नहीं
b) एक परिमेय संख्या पर पूर्णांक नहीं
c) एक पूर्णांक का पूर्ण वर्ग
d) अपरिमेय संख्या

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115. $1 + \sin x + \sin^2 x + \sin^3 x + \dots \infty = 4 + 2\sqrt{3}$, $\sin x + \tan x = ?$
 a) $\frac{3\sqrt{3}}{2}$ b) $\frac{\sqrt{3}}{2}$ c) $3\sqrt{3}$ d) $\frac{\sqrt{3}+2}{2\sqrt{3}}$

116. If $\frac{\sin A}{\sin B} = \frac{\sqrt{3}}{2}$ and $\frac{\cos A}{\cos B} = \frac{\sqrt{5}}{2}$ then, $5\tan^2 A + \tan^2 B = ?$
 यदि $\frac{\sin A}{\sin B} = \frac{\sqrt{3}}{2}$ और $\frac{\cos A}{\cos B} = \frac{\sqrt{5}}{2}$ है, तो $5\tan^2 A + \tan^2 B = ?$
 a) 4 b) 3 c) 1 d) 2

Concept Lecture – 7

117. The simplified value of $(\sec A - \cos A)^2 + (\operatorname{cosec} A - \sin A)^2 - (\cot A - \tan A)^2$
 $(\sec A - \cos A)^2 + (\operatorname{cosec} A - \sin A)^2 - (\cot A - \tan A)^2$ को सरल करें:
 a) 0 b) $\frac{1}{2}$ c) 1 d) 2

118. The value of $(1 + \cot \theta - \operatorname{cosec} \theta)(1 + \tan \theta + \sec \theta)$ is equal to $(1 + \cot \theta - \operatorname{cosec} \theta)(1 + \tan \theta + \sec \theta)$ का मान है:
 a) 1 b) 2 c) 0 d) -1

119. Find the value of $3(\sin^4 \theta + \cos^4 \theta) + 2(\sin^6 \theta + \cos^6 \theta) + 12 \sin^2 \theta \cos^2 \theta$
 $3(\sin^4 \theta + \cos^4 \theta) + 2(\sin^6 \theta + \cos^6 \theta) + 12 \sin^2 \theta \cos^2 \theta$ का मान क्या है।
 a) 3 b) 2 c) 0 d) 5

120. The simplified value of $(\sec x \sec y + \tan x \tan y)^2 - (\sec x \tan y + \tan x \sec y)^2$
 $(\sec x \sec y + \tan x \tan y)^2 - (\sec x \tan y + \tan x \sec y)^2$ को सरल करें।
 a) -1 b) 0 c) $\sec^2 x$ d) 1

121. What is the value of $[\tan^2 (90 - \theta) - \sin^2 (90 - \theta)] \operatorname{cosec}^2 (90 - \theta) \cot^2 (90 - \theta)$

$[\tan^2 (90 - \theta) - \sin^2 (90 - \theta)] \operatorname{cosec}^2 (90 - \theta) \cot^2 (90 - \theta)$ का मान क्या है?
 a) 0 b) 1 c) -1 d) 2

122. What is the value of $\frac{[(\sin x + \sin y)(\sin x - \sin y)]}{(\cos x + \cos y)(\cos y - \cos x)}$?
 $\frac{[(\sin x + \sin y)(\sin x - \sin y)]}{(\cos x + \cos y)(\cos y - \cos x)}$ का मान क्या है?
 a) 0 b) 1 c) -1 d) 2

123. What is the value of $\sin (B - C) \cos (A - D) + \sin (A - B) \cos (C - D) + \sin (C - A) \cos (B - D)$?
 $\sin (B - C) \cos (A - D) + \sin (A - B) \cos (C - D) + \sin (C - A) \cos (B - D)$ का मान क्या है?
 a) $\frac{3}{2}$ b) -3 c) 1 d) 0

124. What is the value of $\cos (90 - B) \sin (C - A) + \sin (90 + A) \cos (B + C) - \sin (90 - C) \cos (A + B)$?
 $\cos (90 - B) \sin (C - A) + \sin (90 + A) \cos (B + C) - \sin (90 - C) \cos (A + B)$ का मान क्या है?
 a) 1 b) $\sin (A + B - C)$ c) $\cos (B + C - A)$ d) 0

125. What is the value of $\frac{[\sin(y - z) + \sin(y + z) + 2 \sin y]}{[\sin(x - z) + \sin(x + z) + 2 \sin x]}$?
 $\frac{[\sin(y - z) + \sin(y + z) + 2 \sin y]}{[\sin(x - z) + \sin(x + z) + 2 \sin x]}$ का मान क्या है?
 a) $\cos x \sin y$ b) $\frac{\sin y}{\sin x}$ c) $\sin z$ d) $\sin x \tan y$

126. What is the value of $[(\cos^3 2\theta + 3 \cos 2\theta) \div (\cos^6 \theta - \sin^6 \theta)]$?
 $[(\cos^3 2\theta + 3 \cos 2\theta) \div (\cos^6 \theta - \sin^6 \theta)]$ का मान क्या है?
 a) 0 b) 1 c) 4 d) 2

127. $\frac{\cot \theta}{\cot \theta - \cot 3\theta} + \frac{\tan \theta}{\tan \theta - \tan 3\theta} = ?$
 a) 1 b) -1 c) 2 d) 0

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128. The value of $\frac{\sin\theta + \cos\theta - 1}{\sin\theta - \cos\theta + 1} \times \frac{\tan^2\theta(\operatorname{cosec}^2\theta - 1)}{\sec\theta - \tan\theta}$ is:
 $\frac{\sin\theta + \cos\theta - 1}{\sin\theta - \cos\theta + 1} \times \frac{\tan^2\theta(\operatorname{cosec}^2\theta - 1)}{\sec\theta - \tan\theta}$ का मान क्या है?
 a) 0 b) -1 c) 1 d) $\frac{1}{2}$

129. $\frac{(2\sin A)(1 + \sin A)}{1 + \sin A + \cos A}$ is equal to:
 $\frac{(2\sin A)(1 + \sin A)}{1 + \sin A + \cos A}$ का मान किसके बराबर है?
 a) $1 + \sin A - \cos A$ b) $1 - \sin A \cos A$
 c) $1 + \cos A - \sin A$ d) $1 + \sin A \cos A$

130. What is the value of $\sin(90^\circ + 2A)[4 - \cos^2(90^\circ - 2A)]$?
 $\sin(90^\circ + 2A)[4 - \cos^2(90^\circ - 2A)]$ का मान क्या है?

- a) $2(\cos^3 A - \sin^3 A)$
 b) $2(\cos^3 A + \sin^3 A)$
 c) $4(\cos^6 A + \sin^6 A)$
 d) $4(\cos^6 A - \sin^6 A)$

131. What is the value of $\frac{[\tan(90-A) + \cot(90-A)]^2}{2 \sec^2(90-2A)}$?
 $\frac{[\tan(90-A) + \cot(90-A)]^2}{2 \sec^2(90-2A)}$ का मान क्या है?
 a) 0 b) 1 c) 2 d) -1

132. If $x = \operatorname{cosec}\theta - \sin\theta$ and $y = \sec\theta - \cos\theta$, then the relation between x and y is
 यदि $x = \operatorname{cosec}\theta - \sin\theta$ और $y = \sec\theta - \cos\theta$ हो, तो x और y के बीच सम्बन्ध होगा

- a) $x^2 + y^2 + 3 = 1$
 b) $x^2 y^2 (x^2 + y^2 + 3) = 1$
 c) $x^2 (x^2 + y^2 - 5) = 1$
 d) $y^2 (x^2 + y^2 - 5) = 1$

133. If $\cot\theta + \tan\theta = p$ and $\sec\theta - \cos\theta = q$ then $(p^2 q)^{\frac{2}{3}} - (p q^2)^{\frac{2}{3}} = ?$
 यदि $\cot\theta + \tan\theta = p$ और $\sec\theta - \cos\theta = q$ है, तो $(p^2 q)^{\frac{2}{3}} - (p q^2)^{\frac{2}{3}} = ?$
 a) 0 b) 1 c) 2 d) 3

134. $\cos\theta + \sin\theta = m$ and $\sec\theta + \operatorname{cosec}\theta = n$ then the value of $n(m^2 - 1)$ is equal to
 अगर $\cos\theta + \sin\theta = m$ और $\sec\theta + \operatorname{cosec}\theta = n$ है, तो $n(m^2 - 1) = ?$
 a) mn b) $4mn$ c) n d) $2m$

135. If $\frac{\cos\alpha}{\sin\alpha + \cos\beta} + \frac{\cos\beta}{\sin\beta - \cos\alpha} = \frac{x}{\sin\alpha - \cos\beta} + \frac{\cos\beta}{\sin\beta + \cos\alpha}$ then 'x' is equal to:
 यदि $\frac{\cos\alpha}{\sin\alpha + \cos\beta} + \frac{\cos\beta}{\sin\beta - \cos\alpha} = \frac{x}{\sin\alpha - \cos\beta} + \frac{\cos\beta}{\sin\beta + \cos\alpha}$ है, 'x' तो बराबर है:
 a) $\cos\beta$ b) $\cos\alpha$
 c) $\sin\beta$ d) $\sin\alpha$

136. What is the value of $[(\sec 2\theta + 1)\sqrt{\sec^2\theta - 1}] \times \frac{1}{2}(\cot\theta - \tan\theta)$?
 $[(\sec 2\theta + 1)\sqrt{\sec^2\theta - 1}] \times \frac{1}{2}(\cot\theta - \tan\theta)$ का मान क्या है?
 a) 0 b) 1 c) $\operatorname{cosec}\theta$ d) $\sec\theta$

137. If $x = a \sec\theta + b \tan\theta$ and $y = a \tan\theta + b \sec\theta$ ($a \neq b$), then the value of $\frac{x^2 - y^2}{a^2 - b^2}$
 अगर $x = a \sec\theta + b \tan\theta$ और $y = a \tan\theta + b \sec\theta$ ($a \neq b$) है, तो $\frac{x^2 - y^2}{a^2 - b^2} = ?$
 a) 0 b) $\frac{1}{2}$ c) 1 d) 2

138. If $\sin A + \sin B = C$ & $\cos A + \cos B = D$, then $\sin(A + B) = ?$
 यदि $\sin A + \sin B = C$ और $\cos A + \cos B = D$ है, तो $\sin(A + B) = ?$
 a) CD b) $\frac{CD}{C^2 + D^2}$ c) $\frac{C^2 + D^2}{2CD}$ d) $\frac{2CD}{C^2 + D^2}$

Concept Lecture - 8

139. Which among the following increases continuously in the range $0^\circ < \theta < 90^\circ$?

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निम्नलिखित में से कौन - सा $0^\circ < \theta < 90^\circ$ की अवधि में लगातार बढ़ता है?

- a) $\cot\theta$ b) $\operatorname{cosec}\theta$ c) $\tan\theta$ d) $\cos\theta$

140. Which of the following statement(s) is/are correct?

1. $\sin 66^\circ$ is less than $\cos 66^\circ$
2. $\sin 26^\circ$ is less than $\cos 26^\circ$.

निम्नलिखित कौन - सा या कौन - से कथन ठीक हैं?

1. $\sin 66^\circ \cos 66^\circ$ से कम है
 2. $\sin 26^\circ \cos 26^\circ$ से कम है |
- a) Only 1 b) Only 2
c) both 1 and 2 d) Neither 1 nor 2

141. The value of $\cos 25^\circ - \sin 25^\circ$ is

- a) Positive but less than 1
b) positive but greater than 1
c) Negative
d) 0

$\cos 25^\circ - \sin 25^\circ$ का मान है :

- a) धनात्मक परन्तु 1 से कम
b) धनात्मक परन्तु 1 से अधिक
c) ऋणात्मक
d) 0

142. If $\cos \theta \geq \frac{1}{2}$ in the first quadrant, then which one of the following is correct?

यदि पहले चतुर्थांश में $\cos \theta \geq \frac{1}{2}$ है, तो निम्न में से कौन - सा ठीक है?

- a) $\theta \leq \frac{\pi}{3}$ b) $\theta \geq \frac{\pi}{3}$
c) $\theta \leq \frac{\pi}{6}$ d) $\theta \geq \frac{\pi}{6}$

143. If $0 < \theta < \frac{\pi}{4}$, then what is $\sqrt{1 - 2\sin\theta\cos\theta}$ equal to?

यदि $0 < \theta < \frac{\pi}{4}$ है, तो $\sqrt{1 - 2\sin\theta\cos\theta}$ किसके बराबर है?

- a) $\cos\theta - \sin\theta$ b) $\sin\theta - \cos\theta$
c) $\pm(\cos\theta - \sin\theta)$ d) $\cos\theta\sin\theta$

144. If $0 \leq \theta < \frac{\pi}{2}$ and $p = \sec^2\theta$ then which one of the following is correct?

यदि $0 \leq \theta < \frac{\pi}{2}$ और $p = \sec^2\theta$ है, तो निम्न में से कौन - सा ठीक है?

- a) $p < 1$ b) $p = 1$
c) $p > 1$ d) $p \geq 1$

145. Which one of the following is true for $0^\circ < \theta < 90^\circ$?

$0^\circ < \theta < 90^\circ$ के लिए निम्न में से कौनसा सत्य है?

- a) $\cos\theta \leq \cos^2\theta$ b) $\cos\theta < \cos^2\theta$
c) $\cos\theta > \cos^2\theta$ d) $\cos\theta \geq \cos^2\theta$

146. If α, β are obtuse angle and $\alpha > \beta$ ($90^\circ < \alpha, \beta < 180^\circ$) then which statement/s are correct?

- 1) $\sin\alpha > \sin\beta$ 2) $\sin\alpha < \sin\beta$
3) $\cos\alpha > \cos\beta$ 4) $\cos\alpha < \cos\beta$

यदि α, β अधिककोण हैं और $\alpha > \beta$ है, ($90^\circ < \alpha, \beta < 180^\circ$) तो कौन - सा/से कथन ठीक हैं?

- 1) $\sin\alpha > \sin\beta$ 2) $\sin\alpha < \sin\beta$
3) $\cos\alpha > \cos\beta$ 4) $\cos\alpha < \cos\beta$
a) Only 1 & 2 b) Only 2
c) Only 4 d) Only 2 & 4

147. Which of the statement(s) given below is/are correct?

1. $\tan\theta$ increases faster than $\sin\theta$ as θ increase.
2. The value of $\sin\theta + \cos\theta$ is always greater than 1.

निम्नलिखित कौन - सा या कौन - से कथन ठीक हैं ?

1. θ में वृद्धि होने पर $\tan\theta, \sin\theta$ की तुलना में तेजी से बढ़ता है।
 2. $\sin\theta + \cos\theta$ का मान हमेशा 1 से बढ़ा होता है।
- a) Only 1 b) only 2
c) both 1 and 2 d) Neither 1 not 2

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148. Find x if $\cos x = -\frac{1}{2}$.

यदि $\cos x = -\frac{1}{2}$ है, तो x का मान ज्ञात करें।

- a) $\frac{3\pi}{2}$ b) $\frac{2\pi}{3}$ c) $\frac{5\pi}{2}$ d) $\frac{3\pi}{4}$

149. If a and b are positive, then the relation

$$\sin \theta = \frac{2a+3b}{3b} \text{ is}$$

यदि a और b धनात्मक हैं, तो $\sin \theta = \frac{2a+3b}{3b}$ के सम्बन्ध हैं :

- a) Not possible b) possible only if $a=b$
c) possible, if $a > b$ d) possible, if $a < b$

150. What is the value of $[(1 - \sin^2 \theta) \sec^2 \theta + \tan^2 \theta] (\cos^2 \theta + 1)$ when $0 < \theta < 90^\circ$?

$$[(1 - \sin^2 \theta) \sec^2 \theta + \tan^2 \theta] (\cos^2 \theta + 1) \text{ का}$$

मान क्या है, यदि $0 < \theta < 90^\circ$ है।

- a) 2 b) > 2 c) ≥ 2 d) < 2

151. If $\sin^2 \alpha + \sin^2 \beta = 2$, then the value of $\cos \frac{\alpha+\beta}{2}$ is

अगर $\sin^2 \alpha + \sin^2 \beta = 2$ है तो $\cos \frac{\alpha+\beta}{2}$ का मान

- a) 1 b) -1 c) 0 d) 0.5

152. For all α_i 's, ($i = 1, 2, 3, \dots, 20$) lying from 0° to 90° , it is given that, $\sin \alpha_1 + \sin \alpha_2 + \sin \alpha_3 + \dots + \sin \alpha_{20} = 20$. What is the value of $(\alpha_1 + \alpha_2 + \alpha_3 + \dots + \alpha_{20})$?

सभी α_i ($i = 1, 2, 3, \dots, 20$) के लिए, जो कि 0° से 90° तक हैं, यह दिया गया है कि $\sin \alpha_1 + \sin \alpha_2 + \sin \alpha_3 + \dots + \sin \alpha_{20} = 20$ है। तो $(\alpha_1 + \alpha_2 + \alpha_3 + \dots + \alpha_{20})$ का मान क्या होगा?

- a) 1800° b) 900° c) 0° d) 20°

153. For all α_i 's, ($i = 1, 2, 3, \dots, 20$) lying from 0° to 90° , it is given that, $\cos \alpha_1 + \cos \alpha_2 + \cos \alpha_3 + \dots + \cos \alpha_{20} = 20$. What is the value of $(\alpha_1 + \alpha_2 + \alpha_3 + \dots + \alpha_{20})$?

सभी α_i , ($i = 1, 2, 3, \dots, 20$) के लिए, जो कि 0° से 90° तक हैं, यह दिया गया है कि $\cos \alpha_1 + \cos \alpha_2 +$

$\cos \alpha_3 + \dots + \cos \alpha_{20} = 20$ है। तो $(\alpha_1 + \alpha_2 + \alpha_3 + \dots + \alpha_{20})$ का मान क्या होगा?

- a) 900° b) 1800° c) 0° d) 20°

154. $\sin^{2020} x + \cos^{2020} x = 1$. $x \in$

$[-5\pi, 5\pi]$. How many values can x take?

$\sin^{2020} x + \cos^{2020} x = 1$. $x \in [-5\pi, 5\pi]$. x के कितने मान हो सकते हैं?

- a) 0 b) 10 c) 21 d) 11

155. If $A = 130^\circ$ and $x = \sin A + \cos A$, then

यदि $A = 130^\circ$ और $x = \sin A + \cos A$ है, तो

- a) $x > 0$ b) $x < 0$
c) $x = 0$ d) $x \leq 0$

156. x is a real number and $\cos \theta = x + \frac{1}{x}$, then

x एक वास्तविक संख्या है और $\cos \theta = x + \frac{1}{x}$ है,

तो

- a) θ is acute angle
b) θ is right angle
c) θ is obtuse angle
d) The value of θ is not possible

Concept Lecture – 9

157. x, y be two acute angles, $x + y < 90^\circ$ and $\sin(2x - 20^\circ) = \cos(2y + 20^\circ)$, then the value of $\tan(x + y)$ is

x, y दो न्यून कोण हैं,

$x + y < 90^\circ$ और $\sin(2x - 20^\circ) =$

$\cos(2y + 20^\circ)$, तो $\tan(x + y)$ का मान बताइए?

- a) $\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) 1 d) $2 + \sqrt{2}$

158. If $\sec(7\theta + 28^\circ) = \operatorname{cosec}(30^\circ - 3\theta)$ then the value of θ is

अगर $\sec(7\theta + 28^\circ) = \operatorname{cosec}(30^\circ - 3\theta)$ है, तो $\theta = ?$

- a) 8 b) 5 c) 60 d) 9

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159. If θ be acute angle and $\tan(4\theta - 50^\circ) = \cot(50^\circ - \theta)$, then the value of θ in degrees is:

अगर θ एक न्यून कोण है और $\tan(4\theta - 50^\circ) = \cot(50^\circ - \theta)$ है, तो $\theta = ?$

- a) 30 b) 40 c) 50 d) 20

160. If $\sin\alpha \cdot \sec(30^\circ + \alpha) = 1$, ($0 < \alpha < 60^\circ$), then the value of $\sin\alpha + \cos 2\alpha$ is

अगर $\sin\alpha \cdot \sec(30^\circ + \alpha) = 1$, ($0 < \alpha < 60^\circ$) है, तो $\sin\alpha + \cos 2\alpha = ?$

- a) 1 b) $\frac{2+\sqrt{3}}{2\sqrt{3}}$ c) 0 d) $\sqrt{2}$

161. If $\tan 2\theta \cdot \tan 4\theta = 1$, then the value of $\tan 3\theta$ is

अगर $\tan 2\theta \cdot \tan 4\theta = 1$ है, तो $\tan 3\theta$ का मान:

- a) $\sqrt{3}$ b) 10 c) 1 d) $\frac{1}{\sqrt{3}}$

162. The value of $\tan 4^\circ \cdot \tan 43^\circ \cdot \tan 47^\circ \cdot \tan 86^\circ$ is

$\tan 4^\circ \cdot \tan 43^\circ \cdot \tan 47^\circ \cdot \tan 86^\circ$ का मान ज्ञात कीजिये।

- a) 2 b) 3 c) 1 d) 4

163. The value of $\cot 10^\circ \cot 20^\circ \cot 60^\circ \cot 70^\circ \cot 80^\circ$ is

$\cot 10^\circ \cot 20^\circ \cot 60^\circ \cot 70^\circ \cot 80^\circ$ का मान ज्ञात कीजिये।

- a) 1 b) -1 c) $\sqrt{3}$ d) $\frac{1}{\sqrt{3}}$

164. The value of $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$ is

$\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ$ का मान ज्ञात कीजिये।

- a) 1 b) 0 c) $\sqrt{3}$ d) $\frac{1}{\sqrt{3}}$

165. If $\theta = 9^\circ$, then what is the value of $\cot \theta \cdot \cot 2\theta \cdot \cot 3\theta \cdot \cot 4\theta \cdot \cot 5\theta \cdot \cot 6\theta \cdot \cot 7\theta \cdot \cot 8\theta \cdot \cot 9\theta$?

यदि $\theta = 9^\circ$ है, तो $\cot \theta \cdot \cot 2\theta \cdot \cot 3\theta \cdot \cot 4\theta \cdot \cot 5\theta \cdot \cot 6\theta \cdot \cot 7\theta \cdot \cot 8\theta \cdot \cot 9\theta$ का मान क्या है?

- a) $\sqrt{3} - 1$ b) 1 c) $\sqrt{3}$ d) $\frac{1}{\sqrt{3}}$

166. $\cot 41^\circ \cdot \cot 42^\circ \cdot \cot 43^\circ \cdot \cot 44^\circ \cdot \cot 45^\circ \cdot \cot 46^\circ \cdot \cot 47^\circ \cdot \cot 48^\circ \cdot \cot 49^\circ = ?$

- a) 1 b) 0 c) $\frac{\sqrt{3}}{2}$ d) $\frac{1}{\sqrt{2}}$

167. The value of $\cot \frac{\pi}{20} \cot \frac{3\pi}{20} \cot \frac{5\pi}{20} \cot \frac{7\pi}{20} \cot \frac{9\pi}{20}$ is

$\cot \frac{\pi}{20} \cot \frac{3\pi}{20} \cot \frac{5\pi}{20} \cot \frac{7\pi}{20} \cot \frac{9\pi}{20}$ का मान

- a) -1 b) $\frac{1}{2}$ c) 0 d) 1

168. $\sin^2 5^\circ + \sin^2 6^\circ + \dots + \sin^2 84^\circ + \sin^2 85^\circ = ?$

- a) $30\frac{1}{2}$ b) $40\frac{1}{2}$ c) 40 d) $39\frac{1}{2}$

169. The value of $\cos^2 1^\circ + \cos^2 5^\circ + \cos^2 9^\circ + \dots + \cos^2 89^\circ$ is

$\cos^2 1^\circ + \cos^2 5^\circ + \cos^2 9^\circ + \dots + \cos^2 89^\circ$ का मान ज्ञात कीजिये।

- a) $11\frac{1}{2}$ b) $11\sqrt{2}$ c) 11 d) $\frac{11}{\sqrt{2}}$

170. $\sin^2 5^\circ + \sin^2 10^\circ + \sin^2 15^\circ + \dots + \sin^2 85^\circ + \sin^2 90^\circ = ?$

- a) $7\frac{1}{2}$ b) $8\frac{1}{2}$ c) 9 d) $9\frac{1}{2}$

171. $(\sec^2 1^\circ + \sec^2 3^\circ + \sec^2 5^\circ + \dots + \sec^2 45^\circ) - (\cot^2 47^\circ + \cot^2 49^\circ + \dots + \cot^2 89^\circ) = ?$

- a) 44 b) 22 c) $22\frac{1}{2}$ d) $44\frac{1}{2}$

172. $(\operatorname{cosec}^2 1^\circ + \operatorname{cosec}^2 5^\circ + \operatorname{cosec}^2 9^\circ + \dots + \operatorname{cosec}^2 45^\circ) - (\tan^2 49^\circ + \tan^2 53^\circ + \dots + \tan^2 89^\circ) = ?$

- a) 24 b) $22\frac{1}{2}$ c) 13 d) $11\frac{1}{2}$

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173. The value of the expression $(1 + \sec 22^\circ + \cot 68^\circ)(1 - \operatorname{cosec} 22^\circ + \tan 68^\circ)$ is $(1 + \sec 22^\circ + \cot 68^\circ)(1 - \operatorname{cosec} 22^\circ + \tan 68^\circ)$ व्यंजक का मान बताइए?

- a) 0 b) 1 c) -1 d) 2

174. $(1 + \sec 20^\circ + \cot 70^\circ)(1 - \operatorname{cosec} 20^\circ + \tan 70^\circ)$ is equal to $(1 + \sec 20^\circ + \cot 70^\circ)(1 - \operatorname{cosec} 20^\circ + \tan 70^\circ)$ किसके बराबर होगा ?

- a) 0 b) 1 c) 2 d) 3

175. The value of $\frac{(\cos 9^\circ + \sin 81^\circ)(\sec 9^\circ + \operatorname{cosec} 81^\circ)}{\sin 56^\circ \sec 34^\circ + \cos 25^\circ \operatorname{cosec} 65^\circ}$ is: $\frac{(\cos 9^\circ + \sin 81^\circ)(\sec 9^\circ + \operatorname{cosec} 81^\circ)}{\sin 56^\circ \sec 34^\circ + \cos 25^\circ \operatorname{cosec} 65^\circ}$ का मान है:

- a) 4 b) $\frac{1}{2}$ c) 2 d) $\frac{1}{4}$

176. If A, B and C be the angles of a triangle, the incorrect relation is:

अगर A, B और C किसी त्रिभुज के कोण हैं तो निम्न में से कौनसा असत्य है:

- a) $\sin \frac{A+B}{2} = \cos \frac{C}{2}$ b) $\cos \frac{B+C}{2} = \sin \frac{A}{2}$
c) $\tan \frac{A+C}{2} = \sec \frac{B}{2}$ d) $\cot \frac{C+A}{2} = \tan \frac{B}{2}$

177. For $\triangle ABC$, find $\cos^2 \frac{A}{2} + \cos^2 \frac{B}{2} + \cos^2 \frac{C}{2} + \cos^2 \frac{(A+B)}{2} + \cos^2 \frac{(B+C)}{2} + \cos^2 \frac{(C+A)}{2}$. $\triangle ABC$ के लिए, $\cos^2 \frac{A}{2} + \cos^2 \frac{B}{2} + \cos^2 \frac{C}{2} + \cos^2 \frac{(A+B)}{2} + \cos^2 \frac{(B+C)}{2} + \cos^2 \frac{(C+A)}{2}$ ज्ञात करो।

- a) 3 b) -3 c) 1 d) 0

178. The value of $(\tan 29^\circ \cot 61^\circ - \operatorname{cosec} 61^\circ) + \cot^2 54^\circ - \sec^2 36^\circ + (\sin^2 1^\circ + \sin^2 3^\circ + \sin^2 5^\circ + \dots + \sin^2 89^\circ)$ is: $(\tan 29^\circ \cot 61^\circ - \operatorname{cosec} 61^\circ) + \cot^2 54^\circ - \sec^2 36^\circ + (\sin^2 1^\circ + \sin^2 3^\circ + \sin^2 5^\circ + \dots + \sin^2 89^\circ)$ का मान है:

- a) $20\frac{1}{2}$ b) 21 c) $22\frac{1}{2}$ d) 22

179. The value $\operatorname{cosec} (67^\circ + \theta) - \sec (23^\circ - \theta) + \cos 15^\circ \cos 35^\circ \operatorname{cosec} 55^\circ \cos 60^\circ \operatorname{cosec} 75^\circ$ is:

$(67^\circ + \theta) - \sec (23^\circ - \theta) + \cos 15^\circ \cos 35^\circ \operatorname{cosec} 55^\circ \cos 60^\circ \operatorname{cosec} 75^\circ$ का मान क्या है?

- a) 2 b) 0 c) 1 d) $\frac{1}{2}$

180. The value of $\frac{\sin(78^\circ + \theta) - \cos(12^\circ - \theta) + (\tan^2 70^\circ - \operatorname{cosec}^2 20^\circ)}{\sin 25^\circ \cos 65^\circ + \cos 25^\circ \sin 65^\circ}$ is:

$\frac{\sin(78^\circ + \theta) - \cos(12^\circ - \theta) + (\tan^2 70^\circ - \operatorname{cosec}^2 20^\circ)}{\sin 25^\circ \cos 65^\circ + \cos 25^\circ \sin 65^\circ}$ का मान है:

- a) 2 b) -1 c) -2 d) 0

181. The expression $\frac{\tan 57^\circ + \cot 37^\circ}{\tan 33^\circ + \cot 53^\circ}$ is equal to

$\frac{\tan 57^\circ + \cot 37^\circ}{\tan 33^\circ + \cot 53^\circ}$ किसके समान है?

- a) $\tan 33^\circ \cot 53^\circ$ b) $\tan 53^\circ \cot 37^\circ$
c) $\tan 33^\circ \cot 57^\circ$ d) $\tan 57^\circ \cot 37^\circ$

182. Which of the following values suits for A to make the equation $\frac{A \tan 62^\circ \sec 28^\circ \cot 38^\circ}{\operatorname{cosec} 62^\circ \tan 11^\circ} = 1$, true?

निम्नलिखित में से A का वह मान क्या होगा जिसके लिए समीकरण $\frac{A \tan 62^\circ \sec 28^\circ \cot 38^\circ}{\operatorname{cosec} 62^\circ \tan 11^\circ} = 1$, सही है?

- a) $\frac{\tan 38^\circ}{\tan 79^\circ \tan 28^\circ}$ b) $\frac{\tan 28^\circ \tan 79^\circ}{\tan 38^\circ \tan 79^\circ}$
c) $\frac{\tan 79^\circ \tan 28^\circ}{\tan 28^\circ \tan 38^\circ}$ d) $\frac{\tan 38^\circ \tan 79^\circ}{\tan 28^\circ}$

183. If $\sin 17^\circ = \frac{x}{y}$, then the value of $(\sec 17^\circ - \sin 73^\circ)$ is

अगर $\sin 17^\circ = \frac{x}{y}$ है, तो $(\sec 17^\circ - \sin 73^\circ)$ का मान पता करो।

- a) $\frac{x^2}{y\sqrt{x^2 - y^2}}$ b) $\frac{y^2}{x\sqrt{x^2 - y^2}}$
c) $\frac{y^2}{x\sqrt{y^2 - x^2}}$ d) $\frac{x^2}{y\sqrt{y^2 - x^2}}$

Mental Test-2

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184. If $0 < x < \frac{\pi}{2}$ and $\sec x = \operatorname{cosec} y$ then the value of $\sin(x + y)$ is

अगर $0 < x < \frac{\pi}{2}$ और $\sec x = \operatorname{cosec} y$ है, तो $\sin(x + y)$ का मान:

- a) 0 b) 1 c) $\frac{1}{2}$ d) $\frac{1}{\sqrt{3}}$

185. If $\sin 5\theta = \cos 20^\circ$ ($0^\circ < \theta < 90^\circ$) then the value of θ is

अगर $\sin 5\theta = \cos 20^\circ$ ($0^\circ < \theta < 90^\circ$) है, तो $\theta = ?$

- a) 4° b) 22° c) 10° d) 14°

186. If $\sin(\theta + 18^\circ) = \cos 60^\circ$ ($0^\circ < \theta < 90^\circ$) then the value of $\cos 5\theta$ is

अगर $\sin(\theta + 18^\circ) = \cos 60^\circ$ ($0^\circ < \theta < 90^\circ$) है, तो $\cos 5\theta = ?$

- a) $\frac{1}{2}$ b) $\frac{\sqrt{3}}{2}$ c) $\frac{1}{\sqrt{2}}$ d) 1

187. If $\sin 7x = \cos 11x$, then the value of $\tan 9x + \cot 9x$ is

अगर $\sin 7x = \cos 11x$ है, तो $\tan 9x + \cot 9x = ?$

- a) 1 b) 2 c) 3 d) 5

188. If $\sin(3x - 20^\circ) = \cos(3y + 20^\circ)$ then the value of $x + y$ is

अगर $\sin(3x - 20^\circ) = \cos(3y + 20^\circ)$ है, तो $x + y = ?$

- a) 20° b) 30° c) 40° d) 45°

189. If $\tan(2\theta + 45^\circ) = \cot 3\theta$, where $2\theta + 45^\circ$ and 3θ are acute angles then the value of θ is

अगर $\tan(2\theta + 45^\circ) = \cot 3\theta$ है जहाँ $2\theta + 45^\circ$ है और 3θ न्यून कोण हैं, तो θ का मान:

- a) 5° b) 9° c) 12° d) 15°

190. If $\sin 3A = \cos(A - 26^\circ)$, where $3A$ is an acute angle then the value of A is

अगर $\sin 3A = \cos(A - 26^\circ)$ है जहाँ $3A$ एक न्यून कोण है, तो A का मान:

- a) 29° b) 26° c) 16° d) 28°

191. If $\cos\theta \operatorname{cosec} 23^\circ = 1$ the value of θ is

अगर $\cos\theta \operatorname{cosec} 23^\circ = 1$ है, तो $\theta = ?$

- a) 23° b) 77° c) 63° d) 67°

192. If $\tan 2\theta \tan 3\theta = 1$, where $0^\circ < \theta < 90^\circ$ then the value of θ is

अगर $\tan 2\theta \tan 3\theta = 1$ है जहाँ $0^\circ < \theta < 90^\circ$ है, तो θ का मान:

- a) $22\left(\frac{1}{2}\right)^\circ$ b) 18° c) 24° d) 30°

193. If $\tan 7\theta \tan 2\theta = 1$, then the value of $\tan 3\theta$ is

अगर $\tan 7\theta \tan 2\theta = 1$ है, तो $\tan 3\theta = ?$

- a) $\sqrt{3}$ b) $-\frac{1}{\sqrt{3}}$ c) $\frac{1}{\sqrt{3}}$ d) $-\sqrt{3}$

194. If θ is positive acute angle and $\tan 2\theta \cdot \tan 3\theta = 1$, then the value of $2 \cos^2 \frac{5\theta}{2} - 1$ is

अगर θ धनात्मक न्यून कोण है और $\tan 2\theta \cdot \tan 3\theta = 1$ है, तो $2 \cos^2 \frac{5\theta}{2} - 1 = ?$

- a) $-\frac{1}{2}$ b) 1 c) 0 d) $\frac{1}{2}$

195. $(\tan 35^\circ \tan 45^\circ \tan 55^\circ) = ?$

- a) $\frac{1}{2}$ b) 2 c) 0 d) 1

196. The simplest value of $\cot 9^\circ \cot 27^\circ \cot 63^\circ \cot 81^\circ$ is

$\cot 9^\circ \cot 27^\circ \cot 63^\circ \cot 81^\circ$ को सरल करें।

- a) 0 b) 1 c) -1 d) $\sqrt{3}$

197. $\tan 10^\circ \tan 15^\circ \tan 75^\circ \tan 80^\circ = ?$

- a) 0 b) 1 c) -1 d) 2

198. Find the value of $\tan^{n-1} \tan^{n-2} \tan^{n-3} \dots \tan^{n-88} \tan^{n-89}$.

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- $\tan^n 1^\circ \tan^n 2^\circ \tan^n 3^\circ \dots \tan^n 88^\circ \tan^n 89^\circ$ का मान ज्ञात करो।
a) 0 b) 3 c) 1 d) 4
199. If $\tan^5 \theta \tan^{55} \theta = 1$, then find the value of \tan^{30}
यदि $\tan^5 \theta \tan^{55} \theta = 1$ है, तो \tan^{30} का मान ज्ञात करो।
a) 5 b) -1 c) 1 d) 3
200. The value of $\frac{\sin 25^\circ \cos 65^\circ + \cos 25^\circ \sin 65^\circ}{\tan^2 70^\circ - \operatorname{cosec}^2 20^\circ}$ का मान क्या होगा?
a) -1 b) 0 c) 1 d) 2
201. The value of $\left[\sin^2 7\frac{1}{2}^\circ + \sin^2 82\frac{1}{2}^\circ \right]$ is $\left[\sin^2 7\frac{1}{2}^\circ + \sin^2 82\frac{1}{2}^\circ \right]$ का मान ज्ञात करो।
a) 1 b) 2 c) 0 d) 4
202. The value of $\sin^2 22^\circ + \sin^2 68^\circ + \cot^2 30^\circ$ is $\sin^2 22^\circ + \sin^2 68^\circ + \cot^2 30^\circ$ का मान ज्ञात करो।
a) $\frac{5}{4}$ b) $\frac{3}{4}$ c) 3 d) 4
203. $\sin^2 65^\circ + \sin^2 25^\circ + \cos^2 35^\circ + \cos^2 55^\circ = ?$
a) 0 b) 1 c) 2 d) $\frac{1}{2}$
204. $3\cos 80^\circ \operatorname{cosec} 10^\circ + 2\cos 59^\circ \operatorname{cosec} 31^\circ = ?$
a) 1 b) 3 c) 2 d) 5
205. If $\cos 20^\circ = m$ and $\cos 70^\circ = n$, then the value of $m^2 + n^2$ is
अगर $\cos 20^\circ = m$ और $\cos 70^\circ = n$ है, तो $m^2 + n^2$ का मान:
a) $\frac{1}{2}$ b) 1 c) $\frac{3}{2}$ d) $\frac{1}{\sqrt{2}}$
206. The value of $\left(\frac{\sin 47^\circ}{\cos 43^\circ} \right)^2 + \left(\frac{\cos 43^\circ}{\sin 47^\circ} \right)^2 - 4\cos^2 45^\circ$ का मान है
a) 1 b) $\frac{1}{2}$ c) -1 d) 0
207. $\operatorname{cosec}^2 18^\circ - \frac{1}{\cot^2 72^\circ} = ?$
a) $\frac{1}{\sqrt{3}}$ b) $\frac{\sqrt{2}}{3}$ c) $\frac{1}{2}$ d) 1
208. $\frac{\sin 43^\circ}{\cos 47^\circ} + \frac{\cos 19^\circ}{\sin 71^\circ} - 8\cos^2 60^\circ = ?$
a) 0 b) 1 c) 2 d) -1
209. $\frac{\cot 30^\circ - \cot 75^\circ}{\tan 15^\circ - \tan 60^\circ} = ?$
a) 0 b) 1 c) $\sqrt{3} - 1$ d) -1
210. If $\tan\left(\frac{\pi}{2} - \theta\right) = \sqrt{3}$ the value of $\cos \theta$ is
अगर $\tan\left(\frac{\pi}{2} - \theta\right) = \sqrt{3}$ है, तो $\cos \theta = ?$
a) $\frac{\sqrt{3}}{2}$ b) $\frac{1}{\sqrt{2}}$ c) $\frac{1}{2}$ d) 1
211. The value of $\frac{\sin 39^\circ}{\cos 51^\circ} + 2\tan 11^\circ \tan 31^\circ \tan 45^\circ \tan 59^\circ \tan 79^\circ - 3(\sin^2 21^\circ + \sin^2 69^\circ)$ is $\frac{\sin 39^\circ}{\cos 51^\circ} + 2\tan 11^\circ \tan 31^\circ \tan 45^\circ \tan 59^\circ \tan 79^\circ - 3(\sin^2 21^\circ + \sin^2 69^\circ)$ का मान क्या होगा?
a) 2 b) -1 c) 1 d) 0
212. If $A = \tan 11^\circ \tan 29^\circ$, $B = 2\cot 61^\circ \cot 79^\circ$ then ;
अगर $A = \tan 11^\circ \tan 29^\circ$, $B = 2\cot 61^\circ \cot 79^\circ$ है, तो :
a) $A = 2B$ b) $A = -2B$
c) $2A = B$ d) $2A = -B$
213. If $\alpha + \beta = 90^\circ$ then the expression $\frac{\tan \alpha}{\tan \beta} + \sin^2 \alpha + \sin^2 \beta$ is equal to

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अगर $\alpha + \beta = 90^\circ$ है, तो $\frac{\tan\alpha}{\tan\beta} + \sin^2\alpha + \sin^2\beta = ?$
 a) $\tan^2\alpha$ b) $\tan^2\beta$ c) $\sin^2\beta$ d) $\sec^2\alpha$

214. If $\frac{\sec^2 70 - \cot^2 20}{2(\operatorname{cosec}^2 59 - \tan^2 31)} = \frac{2}{m}$ then m is equal to

अगर $\frac{\sec^2 70 - \cot^2 20}{2(\operatorname{cosec}^2 59 - \tan^2 31)} = \frac{2}{m}$ तो m का मान:
 a) 2 b) 3 c) 4 d) 1

215. $\frac{(2 \sin 68^\circ)}{\cos 22^\circ} - \frac{2 \cot 15^\circ}{5 \tan 75^\circ} - \frac{3 \tan 45^\circ \tan 20^\circ \tan 40^\circ \tan 50^\circ \tan 70^\circ}{5} = ?$
 a) -1 b) 0 c) 1 d) 2

216. $\cot\theta \cdot \tan(90^\circ - \theta) - \sec(90^\circ - \theta) \operatorname{cosec}\theta + (\sin^2 25^\circ + \sin^2 65^\circ) + \sqrt{3} (\tan 5^\circ \tan 15^\circ \tan 30^\circ \tan 75^\circ \tan 85^\circ) = ?$
 a) 1 b) -1 c) 2 d) 3

217. $1 + \frac{1}{\cot^2 63^\circ} - \sec^2 27^\circ + \frac{1}{\sin^2 63^\circ} - \operatorname{cosec}^2 27^\circ = ?$
 a) 1 b) 2 c) -1 d) 0

218. $\frac{(\tan 20^\circ)^2}{(\operatorname{cosec} 70^\circ)^2} + \frac{(\cot 20^\circ)^2}{(\sec 70^\circ)^2} + 2 \tan 15^\circ \cdot \tan 45^\circ \cdot \tan 75^\circ = ?$
 a) 1 b) 2 c) 4 d) 3

219. If $\operatorname{cosec} 39^\circ = x$, the value of $\frac{1}{\operatorname{cosec}^2 51^\circ} + \sin^2 39^\circ + \tan^2 51^\circ - \frac{1}{\sin^2 51^\circ \sec^2 39^\circ}$ is
 अगर $\operatorname{cosec} 39^\circ = x$ है, तो $\frac{1}{\operatorname{cosec}^2 51^\circ} + \sin^2 39^\circ + \tan^2 51^\circ - \frac{1}{\sin^2 51^\circ \sec^2 39^\circ} = ?$
 a) $\sqrt{x^2 - 1}$ b) $\sqrt{1 - x^2}$
 c) $x^2 - 1$ d) $1 - x^2$

220. If $\tan 9^\circ = \frac{p}{q}$ then the value of $\frac{(\sec^2 81^\circ)}{1 + \cot^2 81^\circ}$ is
 अगर $\tan 9^\circ = \frac{p}{q}$ है, तो $\frac{(\sec^2 81^\circ)}{1 + \cot^2 81^\circ} = ?$
 a) $\frac{q}{p}$ b) 1 c) $\frac{p^2}{q^2}$ d) $\frac{q^2}{p^2}$

221. $\cos^2 \frac{\pi}{16} + \cos^2 \frac{3\pi}{16} + \cos^2 \frac{5\pi}{16} + \cos^2 \frac{7\pi}{16} = ?$
 a) 0 b) 1 c) 2 d) 3

222. If A, B, C are the angles of a ΔABC then $\sin \frac{B+C}{2}$ is equal to

अगर A, B, C किसी त्रिभुज ΔABC के कोण हैं तो $\sin \frac{B+C}{2} = ?$
 a) $\sec \frac{B}{2}$ b) $\sec \frac{A}{2}$
 c) $\operatorname{cosec} \frac{A}{2}$ d) $\cos \frac{A}{2}$

Concept Lecture – 10

223. What is the value of $\cos 15^\circ + \cos 165^\circ$?
 $\cos 15^\circ + \cos 165^\circ$ का मान क्या है?
 a) 1 b) $\frac{2}{\sqrt{3}-1}$ c) $\frac{\sqrt{3}+1}{\sqrt{2}}$ d) 0

224. The value of $\cos 24^\circ + \cos 55^\circ + \cos 125^\circ + \cos 204^\circ + \cos 300^\circ$ is
 $\cos 24^\circ + \cos 55^\circ + \cos 125^\circ + \cos 204^\circ + \cos 300^\circ$ का मान क्या है
 a) $-\frac{1}{2}$ b) $\frac{1}{2}$ c) 2 d) 1

225. What is the value of $\sin(630^\circ + A) + \cos A$?
 $\sin(630^\circ + A) + \cos A$ का मान क्या है ?
 a) $\frac{\sqrt{3}}{2}$ b) $2 \cos A$ c) 0 d) $\frac{2}{\sqrt{3}}$

226. What is the value of $[\cos(90^\circ + A) \div \sec(270^\circ - A)] + [\sin(270^\circ + A) \div \operatorname{cosec}(630^\circ - A)]$?
 $[\cos(90^\circ + A) \div \sec(270^\circ - A)] + [\sin(270^\circ + A) \div \operatorname{cosec}(630^\circ - A)]$ का मान क्या है?
 a) $3 \sec A$ b) $\tan A \sec A$
 c) 0 d) 1

227. Let A, B, C, D be the angles of a quadrilateral. If they are concyclic, then the value of $\cos A + \cos B + \cos C + \cos D$ is

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Concept Lecture – 12

A, B, C, D किसी चतुर्भुज के कोण हैं। अगर ये समवृत्तिय कोण हैं, तो $\cos A + \cos B + \cos C + \cos D$ का मान:

- a) 0 b) 1 c) -1 d) 2

228. $\frac{\sin(270^\circ+\theta).\cos(360^\circ+\theta).\tan(170^\circ+\theta)}{\cos(180^\circ+\theta).\sin(270^\circ-\theta).\cot(260^\circ+\theta)} = ?$

- a) 1 b) -1 c) 0 d) 2

229. The value of $\cos A - \sin A$, when $A = \frac{5\pi}{4}$, is

जब $A = \frac{5\pi}{4}$ है, तो $\cos A - \sin A$ का मान क्या होगा?

- a) $\sqrt{2}$ b) $\frac{1}{\sqrt{2}}$ c) 0 d) 1

230. The value of $\cos 105^\circ + \sin 105^\circ$ is

$\cos 105^\circ + \sin 105^\circ$ का मान है।

- a) $\frac{1}{2}$ b) 1 c) $\sqrt{2}$ d) $\frac{1}{\sqrt{2}}$

231. $\cos^4 \frac{\pi}{8} + \cos^4 \frac{3\pi}{8} + \cos^4 \frac{5\pi}{8} + \cos^4 \frac{7\pi}{8}$ is equal to

$\cos^4 \frac{\pi}{8} + \cos^4 \frac{3\pi}{8} + \cos^4 \frac{5\pi}{8} + \cos^4 \frac{7\pi}{8}$ बराबर है।

- a) $\frac{3}{2}$ b) $\frac{-2}{3}$ c) 1 d) -1

232. $\frac{\{[4 \cos(90-A) \sin^3(90+A)] - [4 \sin(90+A) \cos^3(90-A)]\}}{\cos\left(\frac{180+8A}{2}\right)} = ?$

- a) 1 b) -1 c) 0 d) 2

233. If $\tan \theta = \frac{4}{3}$, then $\sin \theta = ?$

यदि $\tan \theta = \frac{4}{3}$ है, तो $\sin \theta = ?$

- a) $-\frac{4}{5}$ but not $\frac{4}{5}$ b) $-\frac{4}{5}$ or $\frac{4}{5}$
c) $\frac{4}{5}$ but not $-\frac{4}{5}$ d) $\frac{4}{5}$

234. If $\sin \theta = \frac{24}{25}$ and θ is in second quadrant, then $\sec \theta + \tan \theta = ?$

यदि $\sin \theta = \frac{24}{25}$ और θ दूसरे चतुर्थांश में है, तो

$\sec \theta + \tan \theta = ?$

- a) -3 b) -5 c) -7 d) 7

235. What is the value of

$\frac{[(\sin 59^\circ \cos 31^\circ + \cos 59^\circ \sin 31^\circ) \div (\cos 20^\circ \cos 25^\circ - \sin 20^\circ \sin 25^\circ)]}{[(\sin 59^\circ \cos 31^\circ + \cos 59^\circ \sin 31^\circ) \div (\cos 20^\circ \cos 25^\circ - \sin 20^\circ \sin 25^\circ)]}$ का मान क्या है?

- a) $\frac{1}{\sqrt{2}}$ b) $2\sqrt{2}$ c) $\sqrt{3}$ d) $\sqrt{2}$

236. If $\cos x \cdot \cos y + \sin x \cdot \sin y = -1$ then $\cos x + \cos y$ is

यदि $\cos x \cdot \cos y + \sin x \cdot \sin y = -1$ हो,

तो $\cos x + \cos y$ का मान होगा?

- a) -2 b) 1 c) 0 d) 2

237. What is the value of

$\{\sin(90-x) \cos[\pi-(x-y)]\} + \{\cos(90-x) \sin[\pi-(y-x)]\}$

$\{\sin(90-x) \cos[\pi-(x-y)]\} +$

$\{\cos(90-x) \sin[\pi-(y-x)]\}$ का मान क्या है?

- a) $-\cos y$ b) $-\sin y$
c) $\cos x$ d) $\tan y$

238. If $m \tan(\theta - 30^\circ) = n \tan(\theta + 120^\circ)$, then

$\frac{m+n}{m-n} = ?$

यदि $m \tan(\theta - 30^\circ) = n \tan(\theta + 120^\circ)$ है, तो

$\frac{m+n}{m-n} = ?$

- a) $2 \cos 2\theta$ b) $\cos 2\theta$
c) $2 \sin 2\theta$ d) $\sin 2\theta$

239. What is the value of $\frac{(\sin x + \sin y)(\sin x - \sin y)}{(\cos x + \cos y)(\cos y - \cos x)}$?

$\frac{(\sin x + \sin y)(\sin x - \sin y)}{(\cos x + \cos y)(\cos y - \cos x)}$ का मान क्या है?

- a) 0 b) 1 c) -1 d) 2

240. What is the value of $[(\sin 7x - \sin 5x) \div (\cos 7x + \cos 5x)] - [(\cos 6x - \cos 4x) \div (\sin 6x + \sin 4x)]$?

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$$\frac{(\sin 7x - \sin 5x) \div (\cos 7x + \cos 5x)}{(\cos 6x - \cos 4x) \div (\sin 6x + \sin 4x)}$$
 का मान क्या है?

- a) 1 b) $2 \tan x$
c) $\tan 2x$ d) $\tan \frac{3x}{2}$

$$\frac{(\cos 3\theta + 2\cos 5\theta + \cos 7\theta) \div (\cos \theta + 2\cos 3\theta + \cos 5\theta)}{\sin 2\theta \cdot \tan 3\theta}$$
 का मान क्या है?

- a) $\cos 2\theta$ b) $\sin 2\theta$
c) $\tan 2\theta$ d) $\cot \theta \sin 2\theta$

241. What is the value of

$$\frac{\{(\sin 4x + \sin 4y \} [\tan(2x - 2y)] \}}{\sin 4x - \sin 4y}$$
 का मान क्या है?

- a) $\tan 2(2x + 2y)$ b) $\tan^2(x + y)$
c) $\cot(x - y)$ d) $\tan(2x + 2y)$

242. What is value of

$$\frac{[\sin(90 - A) + \cos(180 - 2A)]}{\cos(90 - 2A) + \sin(180 - A)}$$
 का मान क्या है?

- a) $\sin \frac{A}{2} \cos A$ b) $\cot \frac{A}{2}$
c) $\tan \frac{A}{2}$ d) $\sin A \cos \frac{A}{2}$

243. What is the value of

$$\frac{[\sin(90^\circ - 10\theta) - \cos(p - 6\theta)]}{[\cos(\frac{p}{2} - 10\theta) - \sin(p - 6\theta)]}$$
 का मान क्या है?

- a) $\tan 2\theta$ b) $\cot 2\theta$
c) $\cot \theta$ d) $\cot 3\theta$

244. What is the value of

$$\frac{\sin(x+y) - 2\sin x + \sin(x-y)}{\cos(x-y) + \cos(x+y) - 2\cos x} \times \frac{\sin 10x - \sin 8x}{\cos 10x + \cos 8x}$$
 का मान क्या है?

- a) 0 b) $\tan^2 x$
c) 1 d) $2 \tan x$

245. $\frac{\sin 3\theta + \sin 5\theta + \sin 7\theta + \sin 9\theta}{\cos 3\theta + \cos 5\theta + \cos 7\theta + \cos 9\theta} = ?$

- a) $\cot 6\theta$ b) $\tan 6\theta$
c) $\cot 3\theta$ d) $\tan 3\theta$

246. What is the value of $[(\cos 3\theta + 2\cos 5\theta + \cos 7\theta) \div (\cos \theta + 2\cos 3\theta + \cos 5\theta)] + \sin 2\theta \cdot \tan 3\theta$?

247. What is the value of

$$\frac{\cos 40^\circ - \cos 140^\circ}{\sin 80^\circ + \sin 20^\circ}$$
 का मान क्या है?

- a) $2\sqrt{3}$ b) $\frac{2}{\sqrt{3}}$
c) $\frac{1}{\sqrt{3}}$ d) $\sqrt{3}$

248. $\frac{\cos 12^\circ - \sin 12^\circ}{\cos 12^\circ + \sin 12^\circ} + \frac{\sin 147^\circ}{\cos 147^\circ} = ?$

- a) 1 b) -1 c) 0 d) $\frac{1}{2}$

249. $\cos A + \cos(240^\circ + A) + \cos(240^\circ - A)$?

- a) $\cos A$ b) 0
c) $\sqrt{3} \sin A$ d) $\sqrt{3} \cos A$

250. What is the value of

$$\frac{2\sin(45+\theta) \sin(45-\theta)}{\cos 2\theta}$$
 का मान क्या है?

- a) 0 b) $\tan 2\theta$ c) $\cot 2\theta$ d) 1

251. $\cos \left[\frac{180 - \theta}{2} \right] \cos \left[\frac{180 - 9\theta}{2} \right] + \sin \left[\frac{180 - 3\theta}{2} \right] \sin \left[\frac{180 - 13\theta}{2} \right] = ?$

- $\cos \left[\frac{180 - \theta}{2} \right] \cos \left[\frac{180 - 9\theta}{2} \right] + \sin \left[\frac{180 - 3\theta}{2} \right] \sin \left[\frac{180 - 13\theta}{2} \right]$ का मान क्या है?
a) $\sin 2\theta \sin 4\theta$ b) $\cos 2\theta \cos 6\theta$
c) $\sin 2\theta \sin 6\theta$ d) $\cos 2\theta \cos 4\theta$

252. Find $\frac{1}{2} \operatorname{cosec} 10^\circ - 2\sin 70^\circ$.

- $\frac{1}{2} \operatorname{cosec} 10^\circ - 2\sin 70^\circ$ ज्ञात करो।
a) 0 b) -1 c) 1 d) 2

253. Find $\cot 70^\circ + 4\cos 70^\circ$.

- $\cot 70^\circ + 4\cos 70^\circ$ ज्ञात करो।
a) $\sqrt{3}$ b) $\frac{1}{\sqrt{3}}$ c) 1 d) 0

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254. If $A, B \in (0, \frac{\pi}{2})$, $\sin A = \frac{4}{5}$ and $\cos(A + B) = -\frac{12}{13}$, then $\sin B = ?$

यदि $A, B \in (0, \frac{\pi}{2})$, $\sin A = \frac{4}{5}$ और $\cos(A + B) = -\frac{12}{13}$ है, तो $\sin B = ?$

- a) $\frac{61}{65}$ b) $\frac{16}{65}$ c) $\frac{63}{65}$ d) $\frac{-63}{65}$

255. $\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ = ?$
a) 1 b) 2 c) 3 d) 4

256. What is the value of $\tan(\frac{\pi}{4} + A) \times \tan(\frac{3\pi}{4} + A)$?

$\tan(\frac{\pi}{4} + A) \times \tan(\frac{3\pi}{4} + A)$ का मान क्या है?

- a) 1 b) 0 c) $\frac{\cot A}{2}$ d) -1

257. If $\tan \theta = \frac{1}{2}$ and $\tan \phi = \frac{1}{3}$, then $\theta + \phi = ?$

यदि $\tan \theta = \frac{1}{2}$ और $\tan \phi = \frac{1}{3}$, तो $\theta + \phi = ?$

- a) $\frac{\pi}{6}$ b) 0 c) $\frac{\pi}{4}$ d) π

258. If $\tan(A + B) = \frac{2}{3}$, $\tan(A - B) = \frac{1}{5}$, then find the value of $\tan 2A$.

यदि $\tan(A + B) = \frac{2}{3}$, $\tan(A - B) = \frac{1}{5}$ है, तो $\tan 2A$ का मान ज्ञात करो।

- a) 5 b) 7 c) 1 d) 3

259. If $0^\circ < A, B < 45^\circ$, $\cos(A + B) = \frac{24}{25}$ and $\sin(A - B) = \frac{15}{17}$, then $\tan 2A$ is:

यदि $0^\circ < A, B < 45^\circ$, $\cos(A + B) = \frac{24}{25}$ और

$\sin(A - B) = \frac{15}{17}$ है, तो $\tan 2A$ है:

- a) $\frac{213}{4}$ b) 0
c) 1 d) $\frac{416}{87}$

260. Find the value of $\tan 70^\circ$

$\tan 70^\circ$ का मान ज्ञात करो।

- a) $\tan 50^\circ + \tan 20^\circ$
b) $\tan 50^\circ + 2 \tan 20^\circ$

- c) $2 \tan 50^\circ + \tan 20^\circ$
d) $2 \tan 50^\circ + 2 \tan 20^\circ$

261. Find the value of $\tan 80^\circ$

$\tan 80^\circ$ का मान ज्ञात करो।

- a) $\tan 70^\circ + \tan 10^\circ$
b) $\tan 70^\circ + 2 \tan 10^\circ$
c) $2 \tan 70^\circ + \tan 10^\circ$
d) $2 \tan 70^\circ + 2 \tan 10^\circ$

262. $\tan 3A - \tan 2A - \tan A = ?$

- a) $\tan 3A \tan 2A \tan A$
b) $-\tan 3A \tan 2A \tan A$
c) $\tan A \tan 2A - \tan 2A \tan 3A - \tan 3A \tan A$
d) None of these

263. If $A + B + C = 180^\circ$, then $\frac{\tan A + \tan B + \tan C}{\tan A \tan B \tan C} = ?$

यदि $A + B + C = 180^\circ$ है, तो $\frac{\tan A + \tan B + \tan C}{\tan A \tan B \tan C} = ?$

- a) 0 b) 2 c) 1 d) -1

264. $\tan \frac{2\pi}{5} - \tan \frac{\pi}{15} - \sqrt{3} \tan \frac{2\pi}{5} \tan \frac{\pi}{15} = ?$

- a) 0 b) 1 c) $\sqrt{2}$ d) $\sqrt{3}$

265. $\cot(\frac{\pi}{4} + \theta) \cot(\frac{\pi}{4} - \theta) = ?$

- a) -1 b) 1 c) 0 d) ∞

266. If $\tan \alpha, \tan \beta$ are the roots of $x^2 + px + q = 0$ ($p \neq q$) then $\tan(\alpha + \beta) = ?$

यदि $\tan \alpha, \tan \beta$, $x^2 + px + q = 0$ ($p \neq q$) के मूल हैं, तो $\tan(\alpha + \beta) = ?$

- a) $p - 1$ b) $\frac{p}{q-1}$
c) $2q - p$ d) None of these

267. If $\sin A = \frac{1}{\sqrt{10}}$ and $\sin B = \frac{1}{\sqrt{5}}$, where A and B are positive acute angles, then $A + B = ?$

अगर $\sin A = \frac{1}{\sqrt{10}}$ और $\sin B = \frac{1}{\sqrt{5}}$ है, जहाँ A और B धनात्मक न्यून कोण हैं, तो $A + B = ?$

- a) π b) $\frac{\pi}{2}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{3}$

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268. If $0 \leq \theta \leq \frac{\pi}{2}$ and $\cos \theta + \sqrt{3} \sin \theta = 2$ then what is the value of θ ?

यदि $0 \leq \theta \leq \frac{\pi}{2}$ और $\cos \theta + \sqrt{3} \sin \theta = 2$ है, तो θ का मान क्या है ?

- a) $\frac{\pi}{3}$ b) $\frac{\pi}{4}$ c) $\frac{\pi}{6}$ d) $\frac{\pi}{2}$

269. $\frac{1}{4} [\sqrt{3} \cos 23^\circ - \sin 23^\circ] = ?$

- a) $\cos 43^\circ$ b) $\cos 7^\circ$
c) $\cos 53^\circ$ d) $\frac{1}{2} \cos 53^\circ$

270. If $\cos(A - B) = \frac{3}{5}$ and $\tan A \tan B = 2$, then यदि $\cos(A - B) = \frac{3}{5}$ और $\tan A \tan B = 2$ है, तो

- a) $\cos A \cos B = \frac{2}{5}$ b) $\sin A \sin B = \frac{2}{5}$
c) $\cos A \cos B = -\frac{1}{5}$ d) $\sin A \sin B = -\frac{1}{5}$

Concept Lecture – 13

271. What is the value of $\frac{2(1-\sin^2\theta)\operatorname{cosec}^2\theta}{\cot^2\theta(1+\tan^2\theta)} - 1$?

$\frac{2(1-\sin^2\theta)\operatorname{cosec}^2\theta}{\cot^2\theta(1+\tan^2\theta)} - 1$ का मान क्या है?

- a) $\sin 2\theta$ b) $\sin^2\theta$
c) $\cos^2\theta$ d) $\cos 2\theta$

272. $\sec^2 \theta - \left(\frac{\sin^2 \theta - 2 \sin^4 \theta}{2 \cos^4 \theta - \cos^2 \theta} \right) = ?$

- a) 1 b) 2 c) -1 d) 0

273. The simplified form of the given expression $\sin A \cos A (\tan A - \cot A)$ is (where $0^\circ < A < 90^\circ$):

$\sin A \cos A (\tan A - \cot A)$ का सरल रूप: (जहाँ $0^\circ < A < 90^\circ$):

- a) 1 b) $1 - \cos^2 A$
c) $1 - 2 \sin^2 A$ d) $2 \sin^2 A - 1$

274. If $\sin \alpha = \frac{-3}{5}$, where $\pi < \alpha < \frac{3\pi}{2}$, then $\cos \frac{\alpha}{2} = ?$

यदि $\sin \alpha = \frac{-3}{5}$, जहाँ $\pi < \alpha < \frac{3\pi}{2}$ है, तो $\cos \frac{\alpha}{2} = ?$

- a) $-\frac{1}{\sqrt{10}}$ b) $\frac{1}{\sqrt{10}}$
c) $\frac{3}{\sqrt{10}}$ d) $\frac{-3}{\sqrt{10}}$

275. If $a \tan \theta = b$, then $a \cos 2\theta + b \sin 2\theta = ?$

यदि $a \tan \theta = b$ है, तो $a \cos 2\theta + b \sin 2\theta = ?$

- a) a b) b c) -a d) -b

276. If $\cos \theta = \frac{3}{5}$ and $\cos \phi = \frac{4}{5}$, where θ and ϕ are positive acute angles, then $\cos \left(\frac{\theta - \phi}{2} \right) = ?$

यदि $\cos \theta = \frac{3}{5}$ और $\cos \phi = \frac{4}{5}$ हैं, जहाँ θ और ϕ धनात्मक न्यून कोण हैं, तो $\cos \left(\frac{\theta - \phi}{2} \right) = ?$

- a) $\frac{7}{\sqrt{2}}$ b) $\frac{7}{5\sqrt{2}}$ c) $\frac{7}{\sqrt{5}}$ d) $\frac{7}{2\sqrt{5}}$

277. What is the value of $\frac{\tan 5\theta + \tan 3\theta}{4 \cos 4\theta (\tan 5\theta - \tan 3\theta)}$?

$\frac{\tan 5\theta + \tan 3\theta}{4 \cos 4\theta (\tan 5\theta - \tan 3\theta)}$ का मान क्या है?

- a) $\sin 2\theta$ b) $\cos 2\theta$
c) $\tan 4\theta$ d) $\cot 2\theta$

278. $2 \sin A \cos^3 A - 2 \sin^3 A \cos A = ?$

- a) $\sin 4A$ b) $\frac{1}{2} \sin 4A$
c) $\frac{1}{4} \sin 4A$ d) $\frac{1}{8} \sin 4A$

279. $\cos 15^\circ \cos 7\frac{1}{2}^\circ \cdot \cos 82\frac{1}{2}^\circ = ?$

- a) $\frac{1}{2}$ b) $\frac{1}{8}$ c) $\frac{1}{4}$ d) $\frac{1}{16}$

280. What is the value of $\frac{2 \cot \left(\frac{p-A}{2} \right)}{1 + \tan^2 \left(\frac{2p-A}{2} \right)}$?

$\frac{2 \cot \left(\frac{p-A}{2} \right)}{1 + \tan^2 \left(\frac{2p-A}{2} \right)}$ का मान क्या है?

- a) $2 \sin^2 \frac{A}{2}$ b) $\cos A$
c) $\sin A$ d) $\tan A$

281. Find the value of $\frac{1 - \tan^2 22\frac{1}{2}^\circ}{1 + \tan^2 22\frac{1}{2}^\circ}$

$\frac{1 - \tan^2 22\frac{1}{2}^\circ}{1 + \tan^2 22\frac{1}{2}^\circ}$ का मान ज्ञात करो।

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- a) $\frac{1}{\sqrt{2}}$ b) 1 c) $\frac{1}{2}$ d) $\frac{\sqrt{3}}{2}$

282. What is the value of $\frac{[1 - \sin(90 - 2A)]}{1 + \sin(90 + 2A)}$?

$\frac{[1 - \sin(90 - 2A)]}{1 + \sin(90 + 2A)}$ का मान क्या है?

- a) $\sin A \cos A$ b) $\cot^2 A$
c) $\tan^2 A$ d) $\sin^2 A \cos A$

283. $(1 + \cos \frac{\pi}{8})(1 + \cos \frac{3\pi}{8})(1 + \cos \frac{5\pi}{8})(1 + \cos \frac{7\pi}{8}) = ?$

- a) $\frac{1}{4}$ b) $\frac{1}{2}$ c) $\frac{1}{6}$ d) $\frac{1}{8}$

284. $\frac{1 + \sin A - \cos A}{1 + \sin A + \cos A} = ?$

- a) $\tan \frac{A}{2}$ b) $\cot \frac{A}{2}$
c) $\sin \frac{A}{2}$ d) $\cos \frac{A}{2}$

285. $\sqrt{2 + \sqrt{2 + \sqrt{2 + \sqrt{2 + 2\cos 16\theta}}}} = ?$

- a) $2\cos\theta$ b) $\sqrt{2}\cos\theta$
c) $2\sin\theta$ d) $\sqrt{2}\sin\theta$

286. What is the value of

$[(\sec 2\theta + 1)\sqrt{\sec^2\theta - 1}] \times \frac{1}{2}(\cot\theta - \tan\theta)$?

$[(\sec 2\theta + 1)\sqrt{\sec^2\theta - 1}] \times \frac{1}{2}(\cot\theta - \tan\theta)$ का मान क्या है?

- a) 0 b) 1
c) $\operatorname{cosec}\theta$ d) $\sec\theta$

287. $\frac{\sin\theta + \sin 2\theta}{1 + \cos\theta + \cos 2\theta} = ?$

- a) $\tan\theta$ b) $\sin\theta$
c) $\cos\theta$ d) $\tan^2\theta$

288. What is the value of $(\cos^3 2\theta + 3\cos 2\theta) \div (\cos^6\theta - \sin^6\theta)$?

$(\cos^3 2\theta + 3\cos 2\theta) \div (\cos^6\theta - \sin^6\theta)$ का मान क्या है?

- a) 0 b) 1 c) 4 d) 2

289. If $8\cos^2\theta + 8\sec^2\theta = 65$ and $0^\circ < \theta < \frac{\pi}{2}$, then $4\cos 2\theta$ is equal to

यदि $8\cos^2\theta + 8\sec^2\theta = 65$ और $0^\circ < \theta < \frac{\pi}{2}$ है, तो $4\cos 2\theta$ बराबर है।

- a) $-\frac{31}{8}$ b) -3 c) 3 d) $\frac{4}{3}$

290. If $\cos 2B = \frac{\cos(A+C)}{\cos(A-C)}$, then $\tan A, \tan B, \tan C$ are in _____.

यदि $\cos 2B = \frac{\cos(A+C)}{\cos(A-C)}$ है, तो $\tan A, \tan B, \tan C$ _____ में हैं।

- a) A.P. b) GP.
c) H.P. d) none of these

291. Find the value of $3\sin 20^\circ - 4\sin^3 20^\circ$.

$3\sin 20^\circ - 4\sin^3 20^\circ$ का मान ज्ञात करो।

- a) $\frac{\sqrt{3}}{2}$ b) $\frac{1}{2}$ c) $\frac{1}{\sqrt{2}}$ d) $\frac{2}{\sqrt{3}}$

292. Find the value of $3\cos 20^\circ - 4\cos^3 20^\circ$.

$3\cos 20^\circ - 4\cos^3 20^\circ$ का मान ज्ञात करो।

- a) $\frac{\sqrt{3}}{2}$ b) $-\frac{1}{2}$ c) $\frac{1}{2}$ d) $\frac{2}{\sqrt{3}}$

293. If $\sin x = \frac{2}{3}$, then find the value of $\cos 3x$.

यदि $\sin x = \frac{2}{3}$, तो $\cos 3x$ का मान ज्ञात कीजिये।

- a) 0.6735 b) -0.8765
c) -0.5797 d) 0.5678

294. If $x + \frac{1}{x} = 2\cos\theta$, then find the value of $x^3 + \frac{1}{x^3}$.

यदि $x + \frac{1}{x} = 2\cos\theta$ है तो, $x^3 + \frac{1}{x^3}$ का मान ज्ञात करो।

- a) $2\cos 3\theta$ b) $2\sin 3\theta$
c) $\sin 3\theta$ d) $\cos 3\theta$

295. $\cos^2 A(3 - 4\cos^2 A)^2 + \sin^2 A(3 - 4\sin^2 A)^2 = ?$

- a) 1 b) $\sin 4A$

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c) $\cos 4A$ d) 0

296. If $\cos A = \frac{3}{4}$, then $32 \sin \frac{A}{2} \cos \frac{5A}{2} = ?$

यदि $\cos A = \frac{3}{4}$ है, तो $32 \sin \frac{A}{2} \cos \frac{5A}{2} = ?$

a) $\sqrt{7}$ b) $-\sqrt{7}$ c) 7 d) -7

297. In an isosceles $\triangle ABC$, $AB = AC$. AD divides BC in ratio 1:2 and $\angle BAC$ in ratio 1:3. Find $\angle BAD$.

किसी समद्विबाहु त्रिभुज ABC में $AB = AC$ है। AD $\angle BAC$ को 1:3 में और BC को 1:2 में बाँटती है। $\angle BAD$ का मान बताइए।

a) 15° b) 30° c) 45° d) 60°

298. A triangle ABC is inscribed in a circle. If sum of the squares of sides of the triangle is equal to twice the square of the diameter, then $\sin^2 A + \sin^2 B + \sin^2 C$ is equal to

त्रिभुज ABC किसी वृत्त के अंतर्गत खींचा गया है। यदि त्रिभुज की भुजाओं के वर्गों का योग व्यास के वर्ग का दोगुना है तो $\sin^2 A + \sin^2 B + \sin^2 C$ किसके बराबर है?

a) 2 b) 3
c) 4 d) None of these

Concept Lecture – 14

299. Find the value of $\sin 10^\circ \cdot \sin 30^\circ \cdot \sin 50^\circ \cdot \sin 70^\circ$.

$\sin 10^\circ \cdot \sin 30^\circ \cdot \sin 50^\circ \cdot \sin 70^\circ$ का मान ज्ञात करो।

a) $\frac{1}{4}$ b) $\frac{1}{16}$ c) $\frac{1}{8}$ d) $\frac{1}{2}$

300. $\tan 20^\circ \tan 40^\circ \tan 60^\circ \tan 80^\circ = ?$

a) 1 b) $\frac{3}{4}$ c) 3 d) $\frac{\sqrt{3}}{2}$

301. The value of $\cos 10^\circ \cdot \cos 30^\circ \cdot \cos 50^\circ \cdot \cos 70^\circ \cdot \cos 90^\circ$ is:

$\cos 10^\circ \cdot \cos 30^\circ \cdot \cos 50^\circ \cdot \cos 70^\circ \cdot \cos 90^\circ$ का मान है।

a) 5 b) 3 c) 1 d) 0

302. If $x = \cos 10^\circ \cos 20^\circ \cos 40^\circ$, then $x = ?$

यदि $x = \cos 10^\circ \cos 20^\circ \cos 40^\circ$ है, तो $x = ?$

a) $\frac{1}{4} \tan 10^\circ$ b) $\frac{1}{8} \tan 10^\circ$
c) $\frac{1}{4} \cot 10^\circ$ d) $\frac{1}{8} \cot 10^\circ$

303. $\sin 12^\circ \sin 24^\circ \sin 48^\circ \sin 84^\circ = ?$

a) $\frac{1}{4}$ b) $\frac{3}{8}$ c) $\frac{3}{16}$ d) $\frac{1}{16}$

304. $\cos \frac{\pi}{15} \cdot \cos \frac{2\pi}{15} \cdot \cos \frac{4\pi}{15} \cdot \cos \frac{8\pi}{15}$ is equal to

$\cos \frac{\pi}{15} \cdot \cos \frac{2\pi}{15} \cdot \cos \frac{4\pi}{15} \cdot \cos \frac{8\pi}{15}$ बराबर है।

a) $-\frac{1}{16}$ b) $\frac{1}{16}$ c) 1 d) 0

305. What is the value of

$$\frac{32 \cos^6 x - 48 \cos^4 x + 18 \cos^2 x - 1}{4 \sin x \cos x \sin(60-x) \cos(60-x) \sin(60+x) \cos(60+x)}$$

? का मान क्या है?

$$\frac{32 \cos^6 x - 48 \cos^4 x + 18 \cos^2 x - 1}{4 \sin x \cos x \sin(60-x) \cos(60-x) \sin(60+x) \cos(60+x)}$$

का मान क्या है?

a) $4 \tan 6x$ b) $4 \cot 6x$
c) $8 \cot 6x$ d) $8 \tan 6x$

306. Find $(1 + \tan 2^\circ)(1 + \tan 43^\circ)$.

$(1 + \tan 2^\circ)(1 + \tan 43^\circ)$ ज्ञात करो।

a) 0 b) 1 c) 2 d) 3

307. If $A + B = 45^\circ$, then the value of $2(1 + \tan A)(1 + \tan B)$ is:

यदि $A + B = 45^\circ$ है, तो $2(1 + \tan A)(1 + \tan B)$ का मान:

a) 4 b) 1 c) 0 d) 2

308. Find $\left[1 + \tan \left(22 \frac{1^\circ}{2} + x - y\right)\right] \left[1 + \tan \left(22 \frac{1^\circ}{2} + y - x\right)\right]$.

$\left[1 + \tan \left(22 \frac{1^\circ}{2} + x - y\right)\right] \left[1 + \tan \left(22 \frac{1^\circ}{2} + y - x\right)\right]$ ज्ञात करो।

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a) 0 b) 1 c) 2 d) 3

309. If $A - B = \frac{\pi}{4}$, then $(1 + \tan A)(1 - \tan B) =$?

यदि $A - B = \frac{\pi}{4}$ है, तो $(1 + \tan A)(1 - \tan B) =$?

a) 1 b) -1 c) -2 d) 2

310. Find $(1 + \tan 1^\circ) \cdot (1 + \tan 2^\circ) \dots \dots (1 + \tan 45^\circ) = 2^n$ find the value of n.
 $(1 + \tan 1^\circ) \cdot (1 + \tan 2^\circ) \dots \dots (1 + \tan 45^\circ) = 2^n$ तो n का मान ज्ञात करो।

a) 2^{20} b) 2^{21} c) 2^{22} d) 2^{23}

311. $(1 - \cot 1^\circ)(1 - \cot 2^\circ)(1 - \cot 3^\circ) \dots \dots (1 - \cot 43^\circ)(1 - \cot 44^\circ) =$?

a) 2^{20} b) 2^{21} c) 2^{22} d) 2^{23}

312. If $A + B = 45^\circ$, then $\frac{\tan A}{1 - \tan A} \cdot \frac{\tan B}{1 - \tan B} = ?$
यदि $A + B = 45^\circ$ है, तो $\frac{\tan A}{1 - \tan A} \cdot \frac{\tan B}{1 - \tan B} = ?$

a) $\frac{1}{2}$ b) 1 c) $\frac{3}{2}$ d) 2

313. If $A + B = 225^\circ$, then $\frac{\tan A}{1 - \tan A} \cdot \frac{\tan B}{1 - \tan B} = ?$
यदि $A + B = 225^\circ$ है, तो $\frac{\tan A}{1 - \tan A} \cdot \frac{\tan B}{1 - \tan B} = ?$

a) 1 b) -1 c) 0 d) $\frac{1}{2}$

314. $\cot 10^\circ \cot 70^\circ + \cot 70^\circ \cot 100^\circ + \cot 100^\circ \cot 10^\circ = ?$

a) 0 b) 1 c) -1 d) Can't say

Concept Lecture – 15

315. In circular measure, the value of the angle $11^\circ 15'$ is
कोण $11^\circ 15'$ को रेडियन में बदलें।

a) $\frac{\pi}{16}$ b) $\frac{\pi}{8}$ c) $\frac{\pi}{4}$ d) $\frac{\pi}{12}$

316. A unit radian is approximately equal to

एक यूनिट रेडियन लगभग बराबर है

a) $57^\circ 17' 43''$ b) $57^\circ 16' 22''$
c) $57^\circ 17' 47''$ d) $57^\circ 17' 49''$

317. Which of the following statement(s) is/are correct?

1. $\sin 1^\circ > \sin 1$ 2. $\cos 1^\circ < \cos 1$

निम्नलिखित कौन - सा या कौन - से कथन ठीक हैं?
1. $\sin 1^\circ > \sin 1$ 2. $\cos 1^\circ < \cos 1$

a) Only 1 b) only 2
c) both 1 and 2 d) Neither 1 not 2

318. If $\sin(10^\circ 6' 32'') = a$,
 $\operatorname{cosec}(79^\circ 53' 28'') + \tan(10^\circ 6' 32'') = ?$

यदि $\sin(10^\circ 6' 32'') = a$ है, तो
 $\operatorname{cosec}(79^\circ 53' 28'') + \tan(10^\circ 6' 32'') = ?$

a) $\frac{a+1}{\sqrt{1+a^2}}$ b) $\frac{a-1}{\sqrt{a^2+1}}$
c) $\frac{a}{\sqrt{a^2+1}}$ d) $\frac{a+1}{\sqrt{1-a^2}}$

319. The Curve of a railway track is like a circle. If after moving 44 m, the change in angle is 21° then find the radius of circle?

एक रेलमार्ग का वक्र, एक वृत्त के अनुसार बनाना है। तदनुसार, यदि उस मार्ग की ओर 44 मीटर दूरी में एक मार्ग की दिशा में 21° का परिवर्तन करना हो, तो उस वृत्त की त्रिज्या कितनी रखनी होगी?

a) 90 b) 100 c) 120 d) 140

320. If the tip of the pendulums oscillates and makes an arc of 50cm and 60° of angle. Then find the length of the pendulum.

यदि एक पेंडुलम/लोलक का अग्र भाग दोलन करता है तथा 50 सेमी चाप पर 60° का कोण बनाता है। तो पेंडुलम की लम्बाई है ?

a) $47 \frac{9}{11}$ b) $47 \frac{8}{11}$ c) $45 \frac{8}{11}$ d) $46 \frac{8}{11}$

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321. Two arcs of two different circles are the equal length. If these arcs subtend angle 45° and 60° at the centre of the circle find the ratio of the radii of the two circles.

दो अलग-अलग वृत्तों की चाप समान लंबाई की हैं। यदि ये चाप वृत्त के केंद्र पर 45° और 60° के कोण बनाती हैं, तो दोनों वृत्तों की त्रिज्याओं का अनुपात ज्ञात कीजिए।

- a) 4 : 3 b) 5 : 3
c) 6 : 7 d) None

322. The moon subtends an angle of 0.5° at the eye of an observer on earth. The distance of the moon from the earth is 3.906×10^5 approx. What is the length of the diameter of the moon?

पृथ्वी पर खड़े किसी दर्शक की आँख पर चाँद आधा डिग्री का कोण बनाता है. चाँद की पृथ्वी से दूरी 3.906×10^5 है, तो चाँद का व्यास बताइए.

- a) 2410 b) 3410 c) 4410 d) 1410

323. The angle subtended by the earth at the eye of the spaceman, landed on the moon is $1^\circ 48'$. The radius of the earth is 6600km. Find the approximate distance between the moon and the earth?

चाँद पर खड़े एक अन्तरिक्ष यात्री की आँख पर धरती $1^\circ 48'$ का कोण बनती है। धरती की त्रिज्या 6600 km है। धरती और चाँद के बीच दूरी बताइए.

- a) 44×10^3 b) 42×10^3
c) 42×10^4 d) 42×10^5

324. Assuming the average distance of the earth from the sun to be 148×10^6 km and the angle subtended by the sun at the eye of a person on the earth of measure 9×10^{-3} radian . Finds the radius of the sun ?

माना कि पृथ्वी से सूर्य की दूरी लगभग 148×10^6 km है और पृथ्वी पर खड़े किसी व्यक्ति

की आँख पर सूर्य 9×10^{-3} रेडियन का कोण बनाता है, तो सूर्य की त्रिज्या बताइए.

- a) 6.66×10^4 b) 0.666×10^6
c) 6.66×10^3 d) 6.66×10^2

325. The diameter of moon makes an angle of $\frac{1}{2}^\circ$ on the eye of the observer. At what maximum distance from the eye of an observer a coin of diameter 1 cm should be placed, so that the coin covers the moon completely.

चाँद का व्यास एक प्रेक्षक की आँख पर $\frac{1}{2}^\circ$ का कोण बनाता है। प्रेक्षक की आँख से अधिकतम कितनी दूरी पर 1 सेमी. व्यास वाला एक सिक्का रखा जाए ताकि सिक्का चाँद को पूरी तरह ढक ले।

- a) $112 \frac{5}{11}$ सेमी. b) $11 \frac{6}{11}$ सेमी.
c) $11 \frac{5}{11}$ सेमी. d) $114 \frac{6}{11}$ सेमी.

Concept Lecture – 16

326. Maximum value of $2\sin\theta + 3\cos\theta$ is

$2\sin\theta + 3\cos\theta$ का अधिकतम मान:

- a) 2 b) $\sqrt{13}$ c) $\sqrt{15}$ d) 1

327. Find the maximum and minimum values of $27^{\sin x} \cdot 81^{\cos x}$

$27^{\sin x} \cdot 81^{\cos x}$ के अधिकतम और न्यूनतम मान ज्ञात करो।

- a) $27, \frac{1}{27}$ b) $81, \frac{1}{81}$
c) $243, \frac{1}{243}$ d) $729, \frac{1}{729}$

328. In $\triangle ABC$, $\angle C = 90^\circ$. What is the maximum value of $\frac{4a+3b}{c}$?

$\triangle ABC$ में, $\angle C = 90^\circ$ है, तो $\frac{4a+3b}{c}$ का अधिकतम मान क्या होगा?

- a) 2 b) 3 c) 5 d) 4

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329. Find the sum of maximum and minimum

$$5\cos\theta + 3\cos\left(\theta + \frac{\pi}{3}\right) + 3$$

$$5\cos\theta + 3\cos\left(\theta + \frac{\pi}{3}\right) + 3 \quad \text{अधिकतम और}$$

न्यूनतम मानों का योग ज्ञात करो।

- a) 10 b) -4 c) -6 d) 6

330. Find the product of the maximum and minimum values of $10\cos^2x - 6\sin x \cdot \cos x + 2\sin^2x$.

$10\cos^2x - 6\sin x \cdot \cos x + 2\sin^2x$ के अधिकतम और न्यूनतम मानों का गुणनफल ज्ञात करो।

- a) 11 b) 12 c) 10 d) -12

331. Find the minimum and maximum value of $5\sin^2\theta + 10\cos^2\theta + 12\sin\theta\cos\theta$.

$$5\sin^2\theta + 10\cos^2\theta + 12\sin\theta\cos\theta \quad \text{का}$$

अधिकतम और न्यूनतम मान ज्ञात करो।

- a) 1, 12 b) 0, 14
c) 1, 14 d) -1, 14

332. The minimum value of $2\sin^2\theta + 3\cos^2\theta$ is

$$2\sin^2\theta + 3\cos^2\theta \quad \text{का न्यूनतम मान:}$$

- a) 0 b) 3 c) 2 d) 1

333. Find the range of $10\sin^2\alpha - 23\cos^2\alpha$.

$$10\sin^2\alpha - 23\cos^2\alpha \quad \text{का परिसर बताइए।}$$

- a) [10, 23] b) (10, 23)
c) [-23, 10] d) (-23, 10)

334. Find the sum of the minimum values of $4\sin^2\theta + 9\operatorname{cosec}^2\theta$ and $4\tan^2\theta + 9\cot^2\theta$.

$4\sin^2\theta + 9\operatorname{cosec}^2\theta$ और $4\tan^2\theta + 9\cot^2\theta$ के न्यूनतम मानों का योग बताइए।

- a) 24 b) 26 c) 25 d) 23

335. Find the minimum value of $(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2$

$$(\sin\theta + \operatorname{cosec}\theta)^2 + (\cos\theta + \sec\theta)^2 \quad \text{का}$$

न्यूनतम मान ज्ञात कीजिए।

- a) 8 b) 7 c) 9 d) 4

336. The minimum value of $\sin^2\theta + \cos^2\theta + \sec^2\theta + \operatorname{cosec}^2\theta + \tan^2\theta + \cot^2\theta$ is

$$\sin^2\theta + \cos^2\theta + \sec^2\theta + \operatorname{cosec}^2\theta + \tan^2\theta + \cot^2\theta \quad \text{का न्यूनतम मान ज्ञात करो।}$$

- a) 5 b) 7 c) 6 d) 3

337. Find the minimum value of $\sin^2\alpha + \operatorname{cosec}^2\alpha + \cos^2\beta + \sec^2\beta + \tan^2\gamma + \cot^2\gamma = ?$

$$\sin^2\alpha + \operatorname{cosec}^2\alpha + \cos^2\beta + \sec^2\beta + \tan^2\gamma + \cot^2\gamma \quad \text{का न्यूनतम मान ज्ञात करो।}$$

- a) 0 b) 6 c) 8 d) 4

338. Find minimum value of $32\cos^2\theta + 2\tan^2\theta$.

$$32\cos^2\theta + 2\tan^2\theta \quad \text{का न्यूनतम मान ज्ञात करो।}$$

- a) 32 b) 34 c) 16 d) 14

339. Find minimum value of $4\sin^2\theta + 9\cot^2\theta$.

$$4\sin^2\theta + 9\cot^2\theta \quad \text{का न्यूनतम मान ज्ञात करो।}$$

- a) 3 b) 12 c) 13 d) 4

340. The minimum value of $4\sec^2\theta + 9\operatorname{cosec}^2\theta = ?$

$$4\sec^2\theta + 9\operatorname{cosec}^2\theta \quad \text{का न्यूनतम मान:}$$

- a) 1 b) 5 c) 12 d) 25

341. Find the maximum and minimum values of $\sin^4\theta \cdot \cos^4\theta$

$\sin^4\theta \cdot \cos^4\theta$ के अधिकतम और न्यूनतम मान ज्ञात करो।

- a) $\frac{1}{16}, 0$ b) $\frac{1}{16}, -\frac{1}{16}$
c) 16, -16 d) $0, \frac{1}{16}$

342. The greatest value of $\cos^2\left(\frac{\pi}{3} - x\right) -$

$$\cos^2\left(\frac{\pi}{3} + x\right) \text{ is}$$

$$\cos^2\left(\frac{\pi}{3} - x\right) - \cos^2\left(\frac{\pi}{3} + x\right) \quad \text{का सबसे बड़ा मान है?}$$

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a) $-\frac{\sqrt{3}}{2}$
c) $\frac{\sqrt{3}}{2}$

b) $\frac{1}{2}$
d) $\frac{3}{2}$

c) $x > 2y$

d) $2x < y$

343. Consider the following expressions,

1) $\cos^4 \theta + \sin^4 \theta$ 2) $\sin^6 \theta + \cos^6 \theta$
3) $\sin^2 \theta + \cos^4 \theta$ 4) $\cos^2 \theta + \sin^4 \theta$

Let m be the sum of the maximum values and n be the sum of the minimum values of these expressions. Find mn .

निम्नलिखित व्यंजकों पर विचार कीजिये:

1) $\cos^4 \theta + \sin^4 \theta$ 2) $\sin^6 \theta + \cos^6 \theta$
3) $\sin^2 \theta + \cos^4 \theta$ 4) $\cos^2 \theta + \sin^4 \theta$

यदि m व्यंजकों के अधिकतम मानों का योग है और n इनके न्यूनतम मानों का योग है तो mn का मान बताइए।

a) 1 b) 4 c) 9 d) 6

344. If $A = \sin^2 \theta + \cos^4 \theta$ for any value of θ , then the value of A is

अगर θ के किसी मान के लिए $A = \sin^2 \theta + \cos^4 \theta$ है, तो A का मान क्या होगा?

a) $0 \leq A \leq 1$ b) $\frac{3}{4} \leq A \leq 1$
c) $\frac{13}{16} \leq A \leq 1$ d) $\frac{3}{4} \leq A \leq \frac{13}{16}$

345. For real positive numbers a and b , the equation $(a + b)^2 = 4absin^2 \theta$ is true if and only if

वास्तविक धनात्मक संख्याओं a तथा b के लिए, समीकरण $(a + b)^2 = 4absin^2 \theta$ तभी सत्य है जब केवल और केवल _____ है।

a) $2a = b$ b) $a = b$
c) $a = 2b$ d) $a > b$

346. For any real numbers x and y , $sec^2 \theta = \frac{4xy}{(x+y)^2}$ is possible when

किसी भी वास्तविक संख्या x और y के लिए, $sec^2 \theta = \frac{4xy}{(x+y)^2}$ संभव है जब

a) $x = y$ b) $x \neq y$

347. Find the range of $23 sec^2 \theta + 20 tan^2 \theta$.

$23 sec^2 \theta + 20 tan^2 \theta$ का परिसर बताइए।

a) $[20, 23]$ b) $[23, \infty)$
c) $[20, \infty)$ d) $(-\infty, \infty)$

348. Which of the following is correct in respect of the equation $3 - tan^2 \theta = \alpha(1 - 3tan^2 \theta)$? (given that α is a real number).

निम्न में से कौन - सा समीकरण $3 - tan^2 \theta = \alpha(1 - 3tan^2 \theta)$ के संदर्भ में ठीक है? (दिया गया है कि α एक वास्तविक संख्या है)

a) $\alpha \in \left[\frac{1}{3}, 3\right]$
b) $\alpha \in \left(-\infty, \frac{1}{3}\right) \cup [3, \infty)$
c) $\alpha \in \left(-\infty, \frac{1}{3}\right) \cup [3, \infty)$
d) None of these

349. If $2 \sin \left(\frac{px}{2}\right) = x^2 + \frac{1}{x^2}$, then the value of $\left(x + \frac{1}{x}\right)$ is

अगर $2 \sin \left(\frac{px}{2}\right) = x^2 + \frac{1}{x^2}$ है तो $\left(x + \frac{1}{x}\right)$ का मान पता करो।

a) 1 b) 0 c) -1 d) 2

350. If $\sin \frac{\pi x}{2} = x^2 - 2x + 2$, the value of x will be

अगर $\sin \frac{\pi x}{2} = x^2 - 2x + 2$ है, तो $x = ?$
a) 0 b) 1
c) -1 d) none of these

351. For any real number x , $\cos \pi x = x^2 - x + \frac{5}{4}$, the value of x will be

x एक वास्तविक संख्या है और यदि $\cos \pi x = x^2 - x + \frac{5}{4}$ है तो $x = ?$
a) 0 b) 1 c) -1 d) not possible

352. Find the minimum and maximum values of $\sin^2 \theta + \cos \theta$.

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$\sin^2\theta + \cos\theta$ के न्यूनतम और अधिकतम मान ज्ञात करो।

- a) $1, \frac{5}{4}$ b) $\frac{1}{4}, \frac{5}{4}$
c) $-1, \frac{5}{4}$ d) $-\frac{1}{4}, \frac{5}{4}$

353. For $0 < \theta < \pi$, find the minimum value of $3 \sin \theta + \operatorname{cosec}^2 \theta$.

यदि $0 < \theta < \pi$ है तो $3 \sin \theta + \operatorname{cosec}^2 \theta$ का न्यूनतम मान क्या होगा?

- a) 3 b) 4 c) 5 d) 6

358. If $\frac{\tan\theta + \cot\theta}{\tan\theta - \cot\theta} = 2$ ($0 \leq \theta \leq 90^\circ$), then the value of $\sin\theta$ is

- अगर $\frac{\tan\theta + \cot\theta}{\tan\theta - \cot\theta} = 2$ ($0 \leq \theta \leq 90^\circ$) है, तो $\sin\theta = ?$
a) $\frac{2}{\sqrt{3}}$ b) $\frac{\sqrt{3}}{2}$ c) $\frac{1}{2}$ d) 1

359. If $\frac{\sec\theta + \tan\theta}{\sec\theta - \tan\theta} = \frac{5}{3}$, then $\sin\theta$ is equal to

- अगर $\frac{\sec\theta + \tan\theta}{\sec\theta - \tan\theta} = \frac{5}{3}$ है, तो $\sin\theta = ?$
a) $\frac{1}{4}$ b) $\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{3}{4}$

360. If $\frac{\sin\theta + \cos\theta}{(\sin\theta - \cos\theta)} = \frac{5}{4}$, then the value of $\frac{\tan^2\theta + 1}{\tan^2\theta - 1}$ is

- अगर $\frac{\sin\theta + \cos\theta}{(\sin\theta - \cos\theta)} = \frac{5}{4}$ है, तो $\frac{\tan^2\theta + 1}{\tan^2\theta - 1} = ?$
a) $\frac{25}{16}$ b) $\frac{41}{9}$ c) $\frac{41}{40}$ d) $\frac{40}{41}$

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354. If $5 \tan\theta = 4$, then the value of

$\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta}$ is
अगर $5 \tan\theta = 4$ है, तो $\frac{5\sin\theta - 3\cos\theta}{5\sin\theta + 2\cos\theta} = ?$

- a) $\frac{2}{3}$ b) $\frac{1}{4}$ c) $\frac{1}{6}$ d) $\frac{1}{3}$

355. If $\tan\theta = \frac{3}{4}$, then the value of

$\frac{4\sin^2\theta - 2\cos^2\theta}{4\sin^2\theta + 3\cos^2\theta}$ is equal to
अगर $\tan\theta = \frac{3}{4}$ है, तो $\frac{4\sin^2\theta - 2\cos^2\theta}{4\sin^2\theta + 3\cos^2\theta} = ?$

- a) $\frac{1}{21}$ b) $\frac{2}{21}$ c) $\frac{4}{21}$ d) $\frac{8}{21}$

356. If $\tan\alpha = 2$, then the value of $\frac{\operatorname{cosec}^2\alpha - \sec^2\alpha}{\operatorname{cosec}^2\alpha + \sec^2\alpha}$ is

अगर $\tan\alpha = 2$ है, तो $\frac{\operatorname{cosec}^2\alpha - \sec^2\alpha}{\operatorname{cosec}^2\alpha + \sec^2\alpha} = ?$

- a) $-\frac{15}{9}$ b) $\frac{3}{5}$ c) $-\frac{3}{5}$ d) $\frac{17}{5}$

357. If $\tan\theta = 2$, then the value of

$\frac{8\sin\theta + 5\cos\theta}{\sin^3\theta + 2\cos^3\theta + 7\cos\theta}$ is
अगर $\tan\theta = 2$ है, तो $\frac{8\sin\theta + 5\cos\theta}{\sin^3\theta + 2\cos^3\theta + 7\cos\theta} = ?$

- a) 2 b) $2\frac{1}{2}$ c) 3 d) $\frac{7}{3}$

361. If $\frac{1 + \sin\theta}{1 - \sin\theta} = \frac{p^2}{q^2}$, then $\sec\theta$ is equal to:

यदि $\frac{1 + \sin\theta}{1 - \sin\theta} = \frac{p^2}{q^2}$ है, तो $\sec\theta$ निम्नलिखित में से किसके बराबर है:

- a) $\frac{2p^2q^2}{p^2 + q^2}$ b) $\frac{1}{2} \left(\frac{q}{p} + \frac{p}{q} \right)$
c) $\left(\frac{1}{p^2} + \frac{1}{q^2} \right)$ d) $\frac{p^2q^2}{p^2 + q^2}$

362. If $\sin\theta = 3\sin(\theta + 2\alpha)$, then $\tan(\theta + \alpha) + 2\tan\alpha = ?$

यदि $\sin\theta = 3\sin(\theta + 2\alpha)$ है, तो $\tan(\theta + \alpha) + 2\tan\alpha = ?$

- a) 1 b) -1 c) 0 d) 2

363. If $\tan\theta + \cot\theta = 2$, then the value of $\tan^2\theta + \cot^2\theta$ is

अगर $\tan\theta + \cot\theta = 2$ है, तो $\tan^2\theta + \cot^2\theta$ का मान:

- a) 2 b) 1 c) $\sqrt{2}$ d) 0

364. If $\sin\theta + \operatorname{cosec}\theta = 2$, then what is the value of $(\sin^{153}\theta + \operatorname{cosec}^{253}\theta)$?

यदि $\sin\theta + \operatorname{cosec}\theta = 2$ है, तो $(\sin^{153}\theta + \operatorname{cosec}^{253}\theta)$ का मान क्या है?

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a) $\frac{1}{153 \times 253}$

b) $\frac{253}{153}$

c) 2

d) $\frac{153}{253}$

365. If $\sec x + \cos x = 2$, then the value of $\sec^{16} x + \cos^{16} x$ will be

अगर $\sec x + \cos x = 2$ है, तो $\sec^{16} x + \cos^{16} x$ का मान:

a) 1

b) 2

c) $\sqrt{3}$

d) 0

366. If $\sec^2 x - 3\sec x + 2 = 0$, then the value of x ($0 < x < 90^\circ$) is:

यदि $\sec^2 x - 3\sec x + 2 = 0$, तो x ($0 < x < 90^\circ$) का मान क्या होगा?

a) 45°

b) 0°

c) 60°

d) 30°

367. If $5\sin^2 \theta + 14\cos \theta = 13$ and $0^\circ < \theta < 90^\circ$, then what is the value of $\frac{\sec \theta + \cot \theta}{\operatorname{cosec} \theta + \tan \theta}$?

यदि $5\sin^2 \theta + 14\cos \theta = 13$ और $0^\circ < \theta < 90^\circ$ है, तो $\frac{\sec \theta + \cot \theta}{\operatorname{cosec} \theta + \tan \theta}$ का मान क्या है?

a) $\frac{9}{8}$

b) $\frac{31}{29}$

c) $\frac{21}{28}$

d) $\frac{32}{27}$

368. If $\frac{\sin^2 \phi - 3\sin \phi + 2}{\cos^2 \phi} = 1$, where $0^\circ < \phi < 90^\circ$, then what is the value of $(\cos 2\phi + \sin 3\phi + \operatorname{cosec} 2\phi)$?

यदि $\frac{\sin^2 \phi - 3\sin \phi + 2}{\cos^2 \phi} = 1$ है, जिनमे $0^\circ < \phi < 90^\circ$ है, तो $(\cos 2\phi + \sin 3\phi + \operatorname{cosec} 2\phi)$ का मान क्या है?

a) $\frac{2+\sqrt{3}}{3}$

b) $\frac{3+4\sqrt{3}}{6}$

c) $\frac{9+4\sqrt{3}}{6}$

d) $\frac{3+2\sqrt{3}}{3}$

369. If $\tan \theta - \cot \theta = \operatorname{cosec} \theta$, $0^\circ < \theta < 90^\circ$, then what is the value of $\frac{2\tan \theta - \cos \theta}{\sqrt{3}\cot \theta + \sec \theta}$?

यदि $\tan \theta - \cot \theta = \operatorname{cosec} \theta$, $0^\circ < \theta < 90^\circ$ है, तो $\frac{2\tan \theta - \cos \theta}{\sqrt{3}\cot \theta + \sec \theta}$ का मान क्या है?

a) $\frac{2(2\sqrt{3}-1)}{3}$

b) $\frac{4\sqrt{3}-1}{6}$

c) $\frac{3\sqrt{3}-1}{6}$

d) $\frac{2\sqrt{3}-1}{3}$

370. If $6 \tan \theta - 5\sqrt{3} \sec \theta + 12 \cot \theta = 0$, $0^\circ < \theta < 90^\circ$, then the value of $(\operatorname{cosec} \theta + \sec \theta)$ is:

यदि $6 \tan \theta - 5\sqrt{3} \sec \theta + 12 \cot \theta = 0$, $0^\circ < \theta < 90^\circ$ है, तो $(\operatorname{cosec} \theta + \sec \theta)$ का मान:

a) $\frac{3+\sqrt{3}}{2}$

b) $\frac{2(3+2\sqrt{3})}{3}$

c) $\frac{3+2\sqrt{3}}{2}$

d) $\frac{2}{3}(3 + \sqrt{3})$

371. If $1 + \cos^2 \theta = 3\sin \theta \cos \theta$, then the integral value of $\cot \theta$ is ($0 < \theta < \frac{\pi}{2}$)

अगर $1 + \cos^2 \theta = 3\sin \theta \cos \theta$ है, तो $\cot \theta$ का पूर्णांक मान: ($0 < \theta < \frac{\pi}{2}$)

a) 2

b) 1

c) 3

d) 0

Answer key

1. B	2. C	3. C	4. D	5. C
6. D	7. C	8. D	9. B	10. D
11. D	12. D	13. A	14. A	15. C
16. A	17. B	18. D	19. C	20. C
21. B	22. D	23. A	24. D	25. C
26. A	27. B	28. A	29. D	30. D
31. A	32. C	33. D	34. D	35. A
36. C	37. B	38. D	39. C	40. C
41. C	42. C	43. D	44. D	45. A
46. A	47. A	48. B	49. B	50. B
51. A	52. C	53. A	54. A	55. D
56. A	57. B	58. C	59. C	60. A
61. A	62. B	63. A	64. C	65. B
66. A	67. C	68. D	69. C	70. C
71. B	72. B	73. C	74. C	75. C
76. A	77. A	78. A	79. B	80. D
81. A	82. B	83. A	84. D	85. D
86. D	87. A	88. D	89. A	90. C
91. S	92. D	93. A	94. D	95. B
96. B	97. B	98. A	99. C	100. C
101. A	102. A	103. A	104. C	105. A
106. B	107. A	108. D	109. D	110. A
111. D	112. A	113. D	114. D	115. A

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116. A	117. C	118. B	119. D	120. D
121. B	122. B	123. D	124. D	125. B
126. C	127. A	128. C	129. A	130. D
131. C	132. B	133. B	134. D	135. B
136. B	137. C	138. B	139. C	140. B
141. B	142. A	143. A	144. D	145. C
146. D	147. A	148. B	149. A	150. B
151. C	152. A	153. C	154. C	155. A
156. D	157. C	158. A	159. A	160. A
161. C	162. C	163. D	164. B	165. A
166. A	167. D	168. B	169. A	170. D
171. B	172. C	173. D	174. C	175. C
176. C	177. A	178. A	179. D	180. B
181. D	182. C	183. D	184. B	185. D
186. A	187. B	188. B	189. B	190. A
191. D	192. B	193. C	194. C	195. D
196. B	197. B	198. C	199. C	200. A
201. A	202. D	203. C	204. D	205. B
206. D	207. D	208. A	209. D	210. C
211. D	212. C	213. D	214. C	215. C
216. A	217. D	218. D	219. C	220. D
221. C	222. D	223. D	224. B	225. C
226. D	227. A	228. A	229. C	230. D
231. A	232. B	233. B	234. C	235. D
236. C	237. A	238. A	239. C	240. B
241. D	242. C	243. B	244. B	245. B
246. A	247. B	248. C	249. B	250. D
251. B	252. C	253. A	254. C	255. D
256. D	257. C	258. C	259. D	260. C
261. C	262. A	263. C	264. D	265. B
266. B	267. C	268. A	269. D	270. B
271. D	272. A	273. D	274. B	275. A
276. B	277. B	278. B	279. B	280. C
281. A	282. C	283. D	284. A	285. A
286. B	287. A	288. C	289. B	290. B
291. A	292. B	293. C	294. A	295. A
296. B	297. B	298. A	299. B	300. C
301. D	302. D	303. D	304. A	305. C
306. C	307. A	308. C	309. D	310. D
311. C	312. A	313. D	314. B	315. A
316. B	317. D	318. D	319. C	320. B

321. A	322. B	323. C	324. B	325. D
326. B	327. C	328. C	329. D	330. A
331. C	332. C	333. C	334. C	335. A
336. B	337. B	338. D	339. D	340. D
341. A	342. C	343. C	344. B	345. B
346. A	347. B	348. B	349. D	350. B
351. D	352. C	353. B	354. C	355. A
356. C	357. D	358. B	359. A	360. C
361. B	362. B	363. A	364. C	365. B
366. C	367. B	368. C	369. B	370. D
371. A				

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