Mains Special Batch

Trigonometry

$36+64\tan^2\theta = \sec^2\theta$
$+96\tan\theta$

$64+36\tan^2\theta$
$-96\tan\theta = k^2\sec^2\theta$

$100(1+\tan^2\theta) = \sec^2\theta(k^2+1)$

$k^2 = 99$

If 6 + 8 tanq = secq and 8 – 6 tanq = k secq, then what is the value of k^2?

यदि **6 + 8 tanq = secq** और **8 – 6 tanq = k secq** है, तो k^2 का मान ज्ञात करें।

(a) 11
(b) 22
(c) 77
(d) 99

(D)

CDS 2021

If $\left\{\left(\frac{\sec\theta - 1}{\sec\theta + 1}\right)\right\}^{n} = \operatorname{cosec}\theta - \cot\theta$,

then n=?

(a) 1

(b) 0.5

(c) -1

(d) -0.5

B

$\left(\frac{1-c}{1+c}\right)^{n} = \frac{1-c}{s}$

$\left[\frac{(1-c)^2}{s^2}\right]^{n} = \frac{1-c}{s}$

$\left(\frac{1-c}{s}\right)^{2n} = \left(\frac{1-c}{s}\right)^{1}$

$2n = 1$

$n = \frac{1}{2}$

The value of $\left(2\cos^2\theta - 1\right)$

$\left[\dfrac{1+\tan\theta}{1-\tan\theta} + \dfrac{1-\tan\theta}{1+\tan\theta}\right]$ is :

(a) 2

(b) 0

(c) $\dfrac{\sqrt{3}}{2}$

(d) 1

① Value

$\theta = 0°$

$(1)\left(2\right)$

$= 2$

② $(2c^2-1)\left(2\left[\dfrac{1+t^2}{1-t^2}\right]\right)$

$\cos 2\theta \left(2\,\dfrac{1}{\cos 2\theta}\right)$

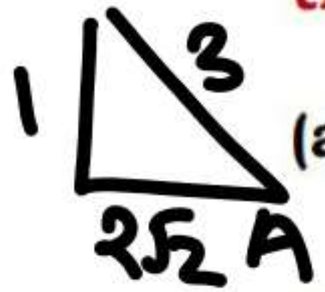
2 (A)

Given that A and B are second quadrant angles,
sinA= 1/3 and sin B= 1/5, then find the value of cos(A-B).

CACB+SASB

$\frac{2\sqrt{2}}{3} \times \frac{2\sqrt{6}}{5} + \frac{1}{15}$

$\frac{8\sqrt{3}+1}{15}$



(a) $\frac{4\sqrt{3}+1}{15}$

(b) $\frac{8\sqrt{3}-1}{15}$

(c) $\frac{8\sqrt{3}+1}{15}$

(d) $\frac{4\sqrt{3}-1}{15}$

(c)

If $\cos A = \sin^2 A$, and $a \sin^{12} A + b \sin^{10} A + c \sin^8 A + \sin^6 A = 1$, then $a + b + c = ?$

(a) 7
(b) 8
(c) 9
(d) 6

$\cos A = \sin^2 A$ → 0.

Cube पर Highest Lowest Power

$a \sin^{12} A + 3 \sin^{10} A + 3 \sin^8 A + \sin^6 A = 1$

1

बीच वाली Power के साथ 3

$1 + 3 + 3$

A

$3a + 2b + c$

$$\sin^{12}A + 3\sin^{10}A + 3\sin^{8}A + \sin^{6}A = 1$$

$$a\sin^{12}A + 0.2b\sin^{10}A + 0.3c\sin^{8}A + 0.4d\sin^{6}A = 1$$

$$\frac{a}{2}\sin^{12}A + \frac{b}{4}\sin^{10}A + \frac{c}{6}\sin^{8}A + \frac{d}{8}\sin^{6}A = 1$$

If $1 + \sin^2\theta - 3\sin\theta\cos\theta = 0$, then the value of $\cot\theta$ is: , $\theta \neq 45°$

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

B

$C^2 + S^2 + S^2 - 3SC = 0$

$2S^2 - 3SC + C^2 = 0$

$2S^2 - 2SC - SC + C^2 = 0$

$2S(S-C) - C(S-C) = 0$

$(2S-C)(S-C) = 0$

$S = C$

$\frac{S}{C} = 1$

$\frac{C}{S} = 2$

Which of the following will satisfy $a^2=b^2+(ab)^2$ for the values a and b?

(a) a = sin x , b = cot x

(b) a = cos x , b = tan x

(c) a = cot x , b = cos x

(d) a = sin x , b = tan x

$$a^2 = b^2 + a^2b^2$$

$$a^2 = b^2(1+a^2)$$

$$b^2 = \frac{a^2}{1+a^2}$$

$$= \frac{\cot^2}{1+\cot^2} = \frac{\cot^2}{\operatorname{cosec}^2} = \cos^2$$

(c)

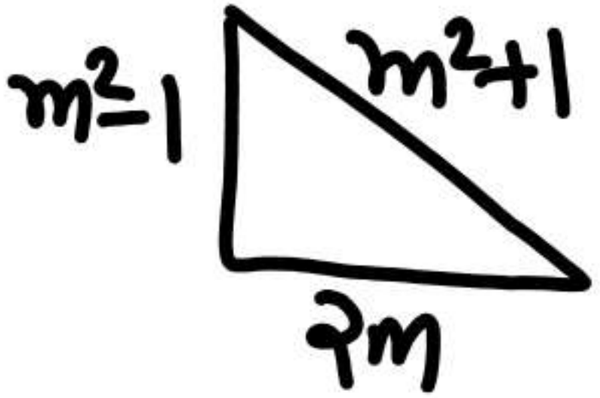
If $1 + \sin\theta = m\cos\theta$, then what is the value of $\sin\theta$?

$\sec + \tan = m$

$\sec - \tan = \frac{1}{m}$

$2\sec = m + \frac{1}{m}$

$2\sec = \frac{m^2+1}{m}$



(a) $\frac{2m^2 - 1}{m^2 + 1}$

(b) $\frac{2m^2 + 1}{m^2 + 1}$

(c) $\frac{m^2 - 1}{m^2 + 1}$

(d) $\frac{m^2 + 1}{m^2 - 1}$

If $\sec x - \cos x = 4$, then what will be the value of $\frac{(1+\cos^2 x)}{\cos x}$?

(a) 9/4
(b) 1/4
~~(c) $2\sqrt{5}$~~
(d) $\sqrt{5}$

$\sec x + \cos x$

$\sqrt{4^2+4}$

(C) $= 2\sqrt{5}$

If Tan A Tan B $+\frac{\cos x}{\cos A \cos B} = 1$, then x = ?

(a) B

(b) A

(c) A+B

(d) A-B

$\frac{SA}{CA}\frac{SB}{CB} + \frac{Cx}{CACB} = 1$

$SASB + Cx = CACB$

$Cx = C(A+B)$

If $x = 8(\sin\theta + \cos\theta)$ and $y = 9(\sin\theta - \cos\theta)$, then the value of $\frac{x^2}{8^2} + \frac{y^2}{9^2}$ is :

(a) 4
(b) 6
(c) 8
(d) 2

Value
$\theta = 90^\circ$

Step Skipping

$(S+C)^2 + (S-C)^2$

$2(S^2+C^2)$

D

What is the value of the expression $\cos 2A \cos 2B + \sin^2(A-B) - \sin^2(A+B)$?

(a) $\sin(2A - 2B)$

(b) $\sin(2A + 2B)$

(c) $\cos(2A + 2B)$

(d) $\cos(2A - 2B)$

C2AC2B - S2AS(2B)

धरधर

cos(x+y)

↳ Step काटना / कम लिखना

↳ पूरा Ans ना निकाल कर बीच में observe करना

If A is an acute angle, the simplified form of

$$\frac{\cos(\pi - A).\cot\left(\frac{\pi}{2} + A\right)\cos(-A)}{\tan(\pi + A)\tan\left(\frac{3\pi}{2} + A\right)\sin(2\pi - A)}$$ is :

(a) $\cos^2 A$
(b) Sin A
(c) Sin2A
(d) Cos A

$\frac{-C \times (-C) C}{C(-C)(-S)}$

$\frac{C^2}{C}$

(D)

अगर option में -ve sign नहीं है तो sign पर ध्यान ही क्यों देना

If $a=45^0$ and $b=15^0$, what is the value of $\dfrac{\cos(a-b)-\cos(a+b)}{\cos(a-b)+\cos(a+b)}$?

(a) $2-2\sqrt{2}$

(b) $3-\sqrt{6}$

(c) $3-\sqrt{2}$

(d) $2-\sqrt{3}$

$$\frac{\sqrt{3}-1}{\sqrt{3}+1}$$

$$\frac{4-2\sqrt{3}}{2}$$

$$=2-\sqrt{3}$$

(D)

$$\frac{\cos A}{1-\tan A}+\frac{\sin A}{1-\cot A}=?$$

(a) tanA-cotA

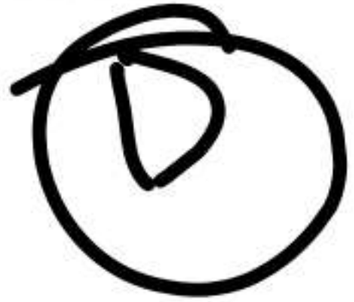
(b) tanA+cotA

(c) sinA-cosA

(d) sinA+cosA

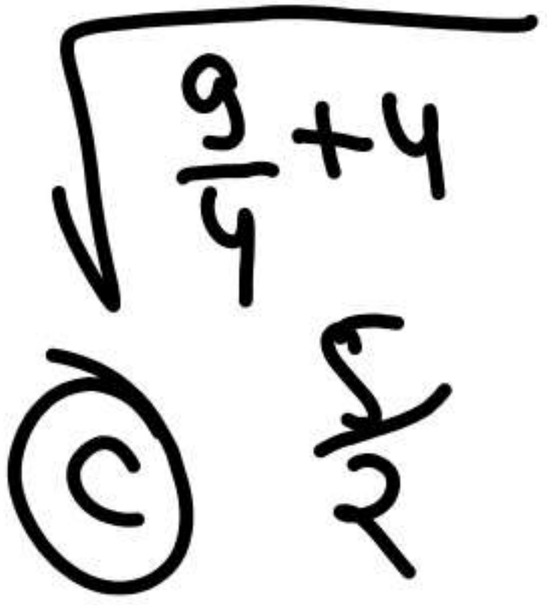
$$\frac{\frac{C^2}{C-S}+\frac{S^2}{S-C}}{\frac{C^2-S^2}{C-S}}$$

$$C+S$$



If cotx – tanx = 3/2, then what will be the value of cotx + tanx?

(a) 3
(b) 2
(c) 5/2
(d) 7/2



If sin (A + B) = cos (A + B), what is the value of tan A?

$A+B=45^\circ$

$A=45^\circ-B$

$\tan(45^\circ-B)=\frac{1-\tan B}{1+\tan B}$

(A)

(a) $\frac{1-\tan B}{1+\tan B}$

(b) $\frac{1+\tan B}{1-\tan B}$

(c) $\frac{1+\sec B}{1-\sec B}$

(d) $\frac{1-\operatorname{cosec} B}{1+\operatorname{cosec} B}$

$\sin^4\theta + \cos^4\theta$ **in terms of** $\sin\theta$

can be written as:

(a) $2\sin^4\theta + 2\sin^2\theta - 1$

(b) $2\sin^4\theta - 2\sin^2\theta$

(c) $2\sin^4\theta - 2\sin^2\theta - 1$

(d) $2\sin^4\theta - 2\sin^2\theta + 1$

$s^4 + (1-s^2)^2$

$2s^4 + 1 - 2s^2$

D

$s^4 + c^4 = 1 - 2s^2c^2$

$s^6 + c^6 = 1 - 3s^2c^2$

If $\sin\theta + \cos\theta = \frac{\sqrt{3}-1}{2\sqrt{2}}$, then what is the value of $\tan\theta + \cot\theta$?

(a) $8\left(\sqrt{3}-2\right)$

(b) $12\left(\sqrt{3}-2\right)$

(c) $12\left(\sqrt{3}+2\right)$

(d) $8\left(\sqrt{3}+2\right)$

$1+2\sin\theta\cos\theta = \frac{4+2-2\sqrt{3}}{4}$

$= \frac{2-\sqrt{3}}{4}$

$2\sin\theta\cos\theta = \frac{2-\sqrt{3}-4}{4}$

$\sin\theta\cos\theta = \frac{-\sqrt{3}-2}{8}$

$\frac{1}{\sin\theta\cos\theta} = \frac{8}{-(\sqrt{3}+2)}$

$\frac{-8(2-\sqrt{3})}{1} \quad 8(\sqrt{3}-2)$

(A)

If $\tan^2\alpha = 3 + Q^2$, then

$\sec\alpha + \tan^3\alpha\,\text{cosec}\,\alpha = ?$

(a) $\left(3 + Q^2\right)^{\frac{3}{2}}$

(b) $\left(7 + Q^2\right)^{\frac{3}{2}}$

(c) $\left(5 - Q^2\right)^{\frac{3}{2}}$

(d) $\left(4 + Q^2\right)^{\frac{3}{2}}$ ✓

$\alpha = 45^\circ$

$Q^2 = -2$

$\sqrt{2} + \sqrt{2} = 2\sqrt{2}$

$= (\sqrt{2})^3$

$= (2)^{3/2}$

(D)

Value से उड़ा देना

Simplify the following:

$$\frac{\cos x - \sqrt{3}\sin x}{2}$$

C60 S60

$\frac{1}{2}$ C − $\frac{\sqrt{3}}{2}$ S

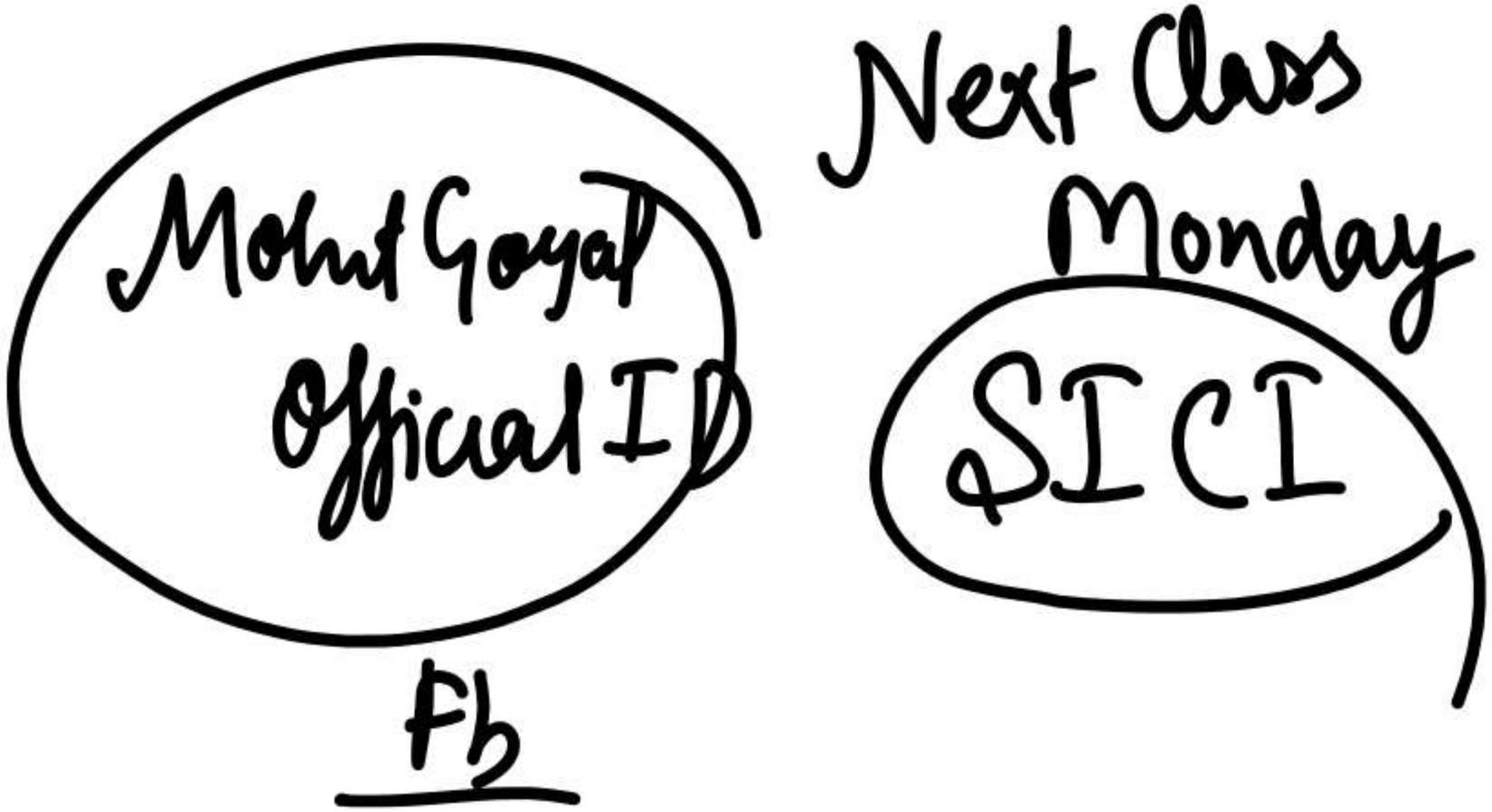
C(60+x)

(a) $\cos\left(\frac{\pi}{3} - x\right)$

(b) $\sin\left(\frac{\pi}{3} + x\right)$

(c) $\cos\left(\frac{\pi}{3} + x\right)$ ✓

(d) $\sin\left(\frac{\pi}{3} - x\right)$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