Mains Special Batch

Trigonometry

$$\frac{\cos x + \cos(x+2\theta)}{\cos(x+\theta)+\cos(x+3\theta)}$$

$$\frac{2C(x+\theta)C(\theta)}{2C(x+2\theta)C(\theta)}$$

$$\frac{b}{c}$$ (C) Ans

$$\frac{\cos x}{a} = \frac{\cos(x+\theta)}{b} = \frac{\cos(x+2\theta)}{c} = \frac{\cos(x+3\theta)}{d}$$

then $\frac{a+c}{b+d} = ?$

$$\frac{\cos x}{a} = \frac{\cos(x+\theta)}{b} =$$

$$\frac{\cos(x+2\theta)}{c} = \frac{\cos(x+3\theta)}{d}$$

तो $\frac{a+c}{b+d}$ का मान क्या होगा?

(a) $\frac{a}{d}$ (b) $\frac{c}{d}$ (c) $\frac{b}{c}$ (d) $\frac{d}{a}$

$S + C = \sqrt{3}$

$1 + 2SC = 3$

$SC = 1$

$3\sqrt{3} - 3 \times 1(\sqrt{3}) = ??$

0

If $\sin\alpha + \cos\alpha = \tan \pi/3$, then the value of $(\sin^3\alpha + \cos^3\alpha)$ is equal to:

यदि $\sin\alpha + \cos\alpha = \tan \pi/3$ है, तो $(\sin^3\alpha + \cos^3\alpha)$ का मान ज्ञात कीजिए।

(a) 1

(b) $\frac{1}{2}$

(c) $\frac{3}{2}$

(d) 0

SSC CHSL 11/08/2021 (Shift- 3)

D

If $\sin\theta = \frac{2\sqrt{ab}}{a+b}$, $a > b > 0$, then the value of $\frac{\cos\theta + 1}{\cos\theta - 1}$ will be:

$\frac{B+H}{B-H}$

$\frac{a-b+a+b}{a-b-a-b} = \frac{2a}{-2b}$

यदि $\sin\theta = \frac{2\sqrt{ab}}{a+b}$, $a > b > 0$ है, तो $\frac{\cos\theta + 1}{\cos\theta - 1}$ का मान ज्ञात करें।

(a) $-\frac{a}{b}$

(b) $\frac{a}{b}$

(c) $-\frac{b}{a}$

(d) $\frac{b}{a}$

(A)

SSC CHSL 19/04/2021 (Shift- 2)

Using the formula $\tan\frac{x}{2}=\frac{1-\cos x}{\sin x}$, find the value of $\tan 22.5°$

सूत्र $\tan\frac{x}{2}=\frac{1-\cos x}{\sin x}$ का प्रयोग करके $\tan 22.5°$ का मान ज्ञात करें।

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

(b) $\sqrt{2}+1$

(c) $\frac{\sqrt{3}+\sqrt{3}}{2}$

(d) $\sqrt{2}-1$

$\frac{1-\cos x}{\sin x}=\tan\frac{x}{2}$

$2\sin^2\frac{x}{2}=t\frac{x}{2}$

$2\sin\frac{x}{2}\left(\cos\frac{x}{2}\right)$

$x=45°$

$\frac{1-\frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}}=\sqrt{2}-1$

(D)

SSC CHSL 2021

$\sin 22.5^\circ$

$$\cos 45^\circ = 1 - 2\sin^2 22.5^\circ$$

$$2\sin^2 22.5^\circ = 1 - \frac{1}{\sqrt{2}}$$

$$\sin 22.5^\circ = \sqrt{\frac{\sqrt{2}-1}{2\sqrt{2}}}$$

The value of $\frac{\sin 4\theta}{(1-\cos 4\theta)}$ is:

$\frac{\sin 4\theta}{(1-\cos 4\theta)}$ का मान ज्ञात करें।

(a) $\cot 2\theta$

(b) $\tan\theta$

(c) $\cot\theta$

(d) $\tan 2\theta$

SSC CHSL 2021

$\frac{2\sin 2\cos 2}{2\sin^2 2}$

$\cot 2\theta$

$1-\cos 2\theta = 2\sin^2\theta$

The value of sin 18° is given as $\frac{\sqrt{5}-1}{4}$.

Find the value of cosec 18°.

$\sin 18° \times \text{cosec}\, 18° = 1$

sin 18° का मान $\frac{\sqrt{5}-1}{4}$ के रूप में दिया जाता है। cosec 18° का मान ज्ञात कीजिए।

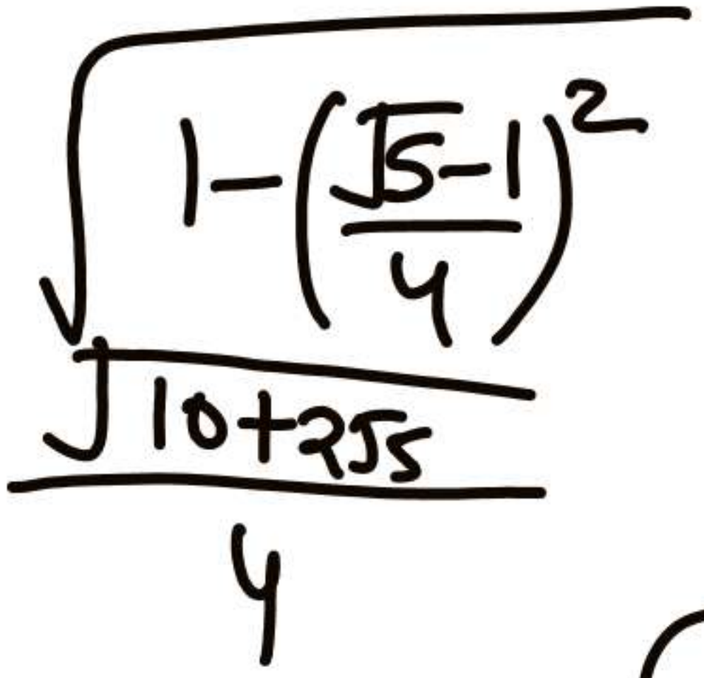
(a) $\frac{\sqrt{5}+1}{2}$

(b) $\sqrt{5}-1$

(c) $\frac{\sqrt{5}+1}{4}$

(d) $\sqrt{5}+1$

SSC CHSL 2021



The value of sin 18° is given as $\frac{\sqrt{5}-1}{4}$.

Using the value, find the value of cos18°

sin 18° का मान $\frac{\sqrt{5}-1}{4}$ के रूप में दिया जाता है। मान का प्रयोग करते हुए, **cos18°** का मान ज्ञात करें।

(a) $\frac{\sqrt{10+2\sqrt{5}}}{4}$

(b) $\frac{\sqrt{10-2\sqrt{5}}}{4}$

(c) $\frac{\sqrt{5}+1}{4}$

(d) $\frac{\sqrt{6}+\sqrt{2}}{4}$

SSC CHSL 2021

The value of sin 73°+cos137° is:

sin 73° + cos137° का मान ज्ञात करें।

(a) cos 13° **(b) sin 18°**

(c) cos 18° **(d) sin 13°**

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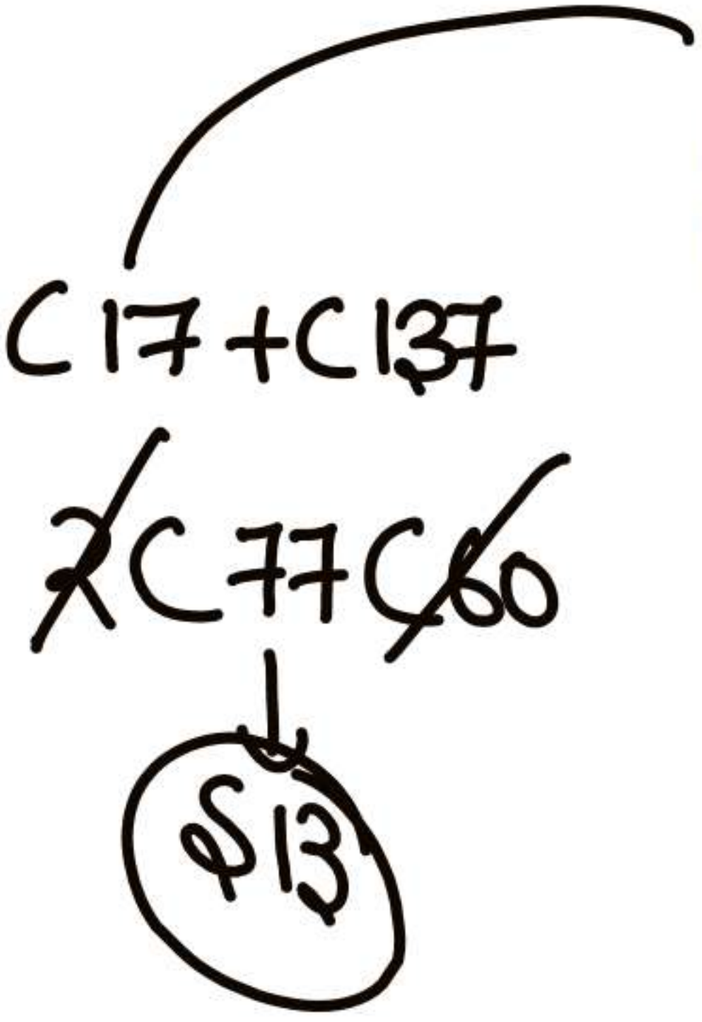

If $\cot 75° = 2 - \sqrt{3}$. Find the value of $\cot 15°$

यदि $\cot 75° = 2 - \sqrt{3}$ है, तो $\cot 15°$ का मान ज्ञात करें।

(a) $2 + \sqrt{3}$

(b) $\sqrt{3} + 1$

(c) $\sqrt{3} - 1$

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

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$\cot A \cot B = 1$

$A + B = 90$

$\tan 75 = \frac{1}{2-\sqrt{3}} = 2+\sqrt{3}$

$22.5°$
$18°$
$15°$

A

$$\frac{\cot^3\theta}{\operatorname{cosec}^2\theta}+\frac{\tan^3\theta}{\sec^2\theta}+2\sin\theta\cos\theta=?$$

$$\frac{\cot^3\theta}{\operatorname{cosec}^2\theta}+\frac{\tan^3\theta}{\sec^2\theta}+2\sin\theta\cos\theta$$ के बराबर है।

(a) $\operatorname{cosec}\theta\sec\theta$ (b) $\operatorname{cosec}^2\theta\sec^2\theta$

(c) $\sin\theta\cos\theta$ (d) $\sin\theta$

SSC CGL 16/08/2022 (Shift 02)

$C^2\times\frac{C}{S}+S^2\frac{S}{C}+2SC$

$\frac{C^4+S^4+2S^2C^2}{SC}$

$\frac{1}{SC}$

$\sec\operatorname{cosec}$

$C^4+S^4=1-2S^2C^2$

$C^4+S^4+2S^2C^2=1$

(A)

$\cot=\operatorname{cosec}\cos$

$=\frac{\operatorname{cosec}}{\sec}$

$\tan=\sin\sec$

$=\sec/\operatorname{cosec}$

If $\cos\theta - \sin\theta = \sqrt{3}\ \cos(90° - \theta)$, $0° < \theta < 90°$ then find the value of $\tan\theta - \cot\theta$.

यदि $\cos\theta - \sin\theta = \sqrt{3}\ \cos(90° - \theta)$, $0° < \theta < 90°$ है, तो $\tan\theta - \cot\theta$ का मान ज्ञात करें।

(a) $\frac{3+2\sqrt{3}}{(1+\sqrt{3})}$

(b) $-\frac{3+2\sqrt{3}}{(1+\sqrt{3})}$

(c) $-\frac{3+2\sqrt{3}}{(1-\sqrt{3})}$

(d) $\frac{3-2\sqrt{3}}{(1+\sqrt{3})}$

SSC CGL 17/08/2022 (Shift 02)

$\cot\theta - 1 = \sqrt{3}$

$\cot\theta = \sqrt{3}+1$

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

$\frac{1-(\sqrt{3}+1)^2}{\sqrt{3}+1}$

$\frac{-3-2\sqrt{3}}{\sqrt{3}+1}$

B

In ΔPQR, $\angle Q = 90°$. If $\tan R = \frac{1}{3}$, then what is the value of

$$\frac{\sec P(\cos R + \sin P)}{\operatorname{cosec} R(\sin R - \operatorname{cosec} P)}$$?

ΔPQR, $\angle Q = 90°$ है। यदि $\tan R = \frac{1}{3}$ है, तो

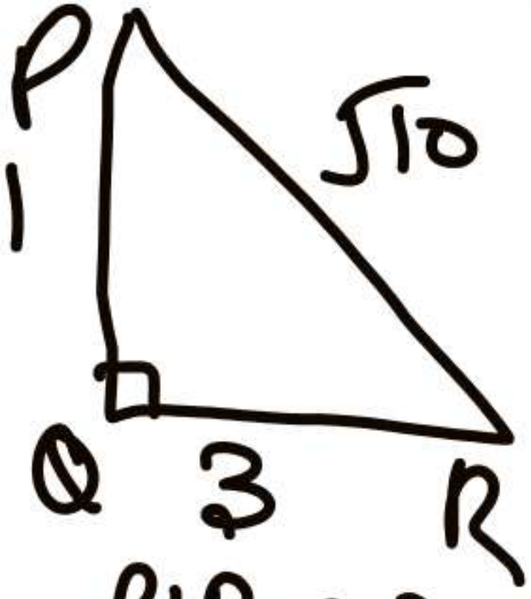
$$\frac{\sec P(\cos R + \sin P)}{\operatorname{cosec} R(\sin R - \operatorname{cosec} P)}$$ का मान ज्ञात करें।

(a) $-\frac{2}{7}$

(b) $\frac{18}{7}$

(c) $\frac{2}{7}$

(d) $-\frac{18}{7}$



P+R=90°

$\frac{2\cos R}{\sin R - \sec R}$

$\frac{2 \times 3/\sqrt{10}}{1/\sqrt{10} - \sqrt{10}/3}$

$\frac{6/\sqrt{10}}{-7/3\sqrt{10}}$

$= -18/7$

SSC CGL 18/08/2022 (Shift 02)

$A+B=90$

$A-B=30$

$A=60$

$B=30$

$$\frac{5\times\frac{1}{4}+4\times 3}{2\times\frac{1}{2}\times\frac{1}{2}}=\frac{53}{\frac{1}{2}}$$

If $\sin(A+B)=1$ and $\cos(A-B)=\frac{\sqrt{3}}{2}$, $A+B \le 90^\circ$ and $A > B$, then the value of $\frac{5\sin^2 B+4\tan^2 A}{2\sin B\cos A}$ is:

यदि $\sin(A+B)=1$ और $\cos(A-B)=\frac{\sqrt{3}}{2}$ है, $A+B \le 90^\circ$ और $A > B$ है, तो $\frac{5\sin^2 B+4\tan^2 A}{2\sin B\cos A}$ का मान ज्ञात करें।

(a) 20

(b) $26\frac{1}{2}$

(c) 18

(d) $16\frac{1}{2}$

B

SSC CGL 18/08/2022 (Shift 03)

If $\tan^2 A + 2 \tan A - 63 = 0$ given that $0 < A < \frac{\pi}{2}$ what is the value of $(2\sin A + 5 \cos A)$?

यदि $\tan^2 A + 2 \tan A - 63 = 0$ है, दिया गया है कि $0 < A < \frac{\pi}{2}$ है, तो $(2\sin A + 5 \cos A)$ का मान ज्ञात करें।

(a) $19\sqrt{50}$

(b) $15\sqrt{50}$

(c) $\frac{19}{\sqrt{50}}$

(d) $\frac{15}{\sqrt{50}}$

SSC CGL PRE 2021

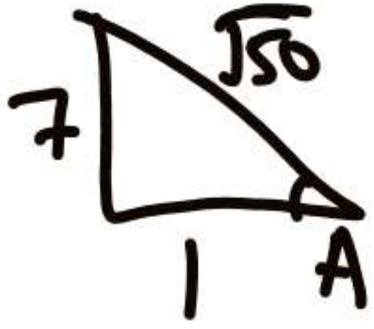
$(t+9)(t-7)=0$

$9, -7$

$-9, +7$

$\tan A = -9 \times$

$\tan A = 7$



$\frac{2\times7}{\sqrt{50}} + \frac{5\times1}{\sqrt{50}} = \frac{19}{\sqrt{50}}$ ✓

(c)

$$\frac{6+\frac{5}{\sqrt{2}}}{\frac{9}{\sqrt{2}}-2}$$

$$\frac{6\sqrt{2}+5}{9-2\sqrt{2}}$$

If A = 10°, what is the value of

$$\frac{12\sin 3A + 5\cos(5A-5)^\circ}{9\sin\frac{9A}{2} - 4\cos(5A+10)^\circ}.$$

यदि **A = 10°** है, तो

$$\frac{12\sin 3A + 5\cos(5A-5)^\circ}{9\sin\frac{9A}{2} - 4\cos(5A+10)^\circ}$$ का मान ज्ञात करें।

(a) $\frac{6\sqrt{2}+5}{(9+2\sqrt{2})}$

(b) $\frac{6\sqrt{2}-5}{(9-2\sqrt{2})}$

(c) $\frac{6\sqrt{2}+5}{(9-2\sqrt{2})}$

(d) $\frac{(9-2\sqrt{2})}{6\sqrt{2}+5}$

SSC CGL PRE 2021

$$\frac{\frac{s^2}{c}\frac{s}{c}+c^2\frac{c}{s}+2sc}{sec^2+cosec^2}$$

$$\frac{1}{sc\,(sec^2 cosec^2)}$$

$$\frac{1}{sec\,cosec}$$

$$cos\,sin$$

$$\frac{\left(\frac{\tan^3\theta}{\sec^2\theta}+\frac{\cot^3\theta}{\operatorname{cosec}^2\theta}+2\sin\theta\cos\theta\right)\div}{(1+\operatorname{cosec}^2\theta+\tan^2\theta)}$$, $0° < \theta < 90°$ is equal to:

$$\left(\frac{\tan^3\theta}{\sec^2\theta}+\frac{\cot^3\theta}{\operatorname{cosec}^2\theta}+2\sin\theta\cos\theta\right)\div$$

$(1+\operatorname{cosec}^2\theta+\tan^2\theta)$, $0° < \theta < 90°$ का मान इनमें से किसके बराबर होगा?

(a) $\sin\theta\cos\theta$
(b) $\operatorname{cosec}\theta$
(c) $\sec\theta$
(d) $\operatorname{cosec}\theta\sec\theta$

A

SSC CGL MAINS 29 Jan 2022

$$\frac{(1+\sec\theta\,\mathrm{cosec}\theta)^2(\sec\theta-\tan\theta)^2(1+\sin\theta)}{(\sin\theta+\sec\theta)^2+(\cos\theta+\mathrm{cosec}\theta)^2},$$

$0° < \theta < 90°$, is equal to:

(a) $1-\cos\theta$

(b) $1-\sin\theta$

(c) $\cos\theta$

(d) $\sin\theta$

B

SSC CGL MAINS 29 Jan 2022

$$\frac{\left(\frac{S+1}{S}\right)^2\frac{C^2}{C^2}(1-S)}{\left(\frac{CS+1}{C}\right)^2+\left(\frac{CS+1}{S}\right)^2}$$

$$\frac{\frac{1-S}{S^2C^2}}{\frac{1}{C^2S^2}}$$

$$\frac{(1-S)^2(1+S)}{C^2}$$

$\sec^2+\mathrm{cosec}^2=\sec^2\mathrm{cosec}^2$

$\frac{1}{C^2}+\frac{1}{S^2}=\frac{1}{C^2S^2}$

$$\frac{1+\cos\theta-\sin^2\theta}{\sin\theta(1+\cos\theta)}\times\frac{\sqrt{\sec^2\theta+\operatorname{cosec}^2\theta}}{\tan\theta+\cot\theta},\ 0^\circ<\theta<90^\circ.$$

(a) $\tan\theta$ (b) $\sec\theta$

(c) $\operatorname{cosec}\theta$ (d) $\cot\theta$

SSC CGL MAINS 29 Jan 2022

$\frac{C^2+C}{S(1+C}$

$\frac{C(1+C)}{S(1+C)}$

$\cot\theta$ (B)

$\frac{\sec\theta\operatorname{cosec}\theta}{\tan\theta+\cot\theta}$

$$\frac{(\tan^2-\sec^2)^3}{(\tan+\cot)^2}$$

$$\frac{-1}{\sec^2\operatorname{cosec}^2}$$

(D)

The expression

$$\frac{\tan^6\theta-\sec^6\theta+3\sec^2\theta\tan^2\theta}{\tan^2\theta+\cot^2\theta+2}$$ **$0°<\theta$ $<90°$, is equal to:**

व्यंजक

$$\frac{\tan^6\theta-\sec^6\theta+3\sec^2\theta\tan^2\theta}{\tan^2\theta+\cot^2\theta+2}$$ का मान बताइए जहां $0°<\theta<90°$ है।

(a) $\sec^2\theta\operatorname{cosec}^2\theta$ (b) $-\sec^2\theta\operatorname{cosec}^2\theta$

(c) $\cos^2\theta\sin^2\theta$ (d) $-\cos^2\theta\sin^2\theta$ ✓

SSC CGL MAINS 03 Feb 2022

The expression

$$\frac{(1-\sin\theta+\cos\theta)^2(1-\cos\theta)\sec^3\theta\,\mathrm{cosec}^2\theta}{(\sec\theta-\tan\theta)(\tan\theta+\cot\theta)},$$

$0°<\theta<90°$, is equal to

व्यंजक $\dfrac{(1-\sin\theta+\cos\theta)^2(1-\cos\theta)\sec^3\theta\,\mathrm{cosec}^2\theta}{(\sec\theta-\tan\theta)(\tan\theta+\cot\theta)}$

का मान बताइए, जहां $0°<\theta<90°$ है।

(a) $\sin\theta$ (b) $2\cos\theta$

(c) $\cot\theta$ (d) $2\tan\theta$

SSC CGL MAINS 03 Feb 2022

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

$\theta = 60°$

$$\frac{\frac{1}{3}+\frac{1}{4}}{\frac{\sqrt{3}}{2}+\frac{\sqrt{3}}{2}} = \frac{\frac{7}{12}}{\frac{2\sqrt{3}}{2}} = \frac{7}{12\times\sqrt{3}} = \frac{7}{18\sqrt{3}} = \frac{7\sqrt{3}}{54}$$

If $\frac{\sin^2\theta}{\cos^2\theta - 3\cos\theta + 2} = 1$, θ lies in the first quadrant, then the value of $\frac{\tan^2\frac{\theta}{2} + \sin^2\frac{\theta}{2}}{\tan\theta + \sin\theta}$ is:

यदि $\frac{\sin^2\theta}{\cos^2\theta - 3\cos\theta + 2} = 1$, θ पहले चतुर्थांष में है, तो $\frac{\tan^2\frac{\theta}{2} + \sin^2\frac{\theta}{2}}{\tan\theta + \sin\theta}$ का मान है?

(a) $\frac{2\sqrt{3}}{27}$

(b) $\frac{5\sqrt{3}}{27}$

(c) $\frac{2\sqrt{3}}{9}$

(d) $\frac{7\sqrt{3}}{54}$ ✓

D

SSC CGL MAINS 03 Feb 2022

$\frac{sc}{\frac{s}{c}}$

$c^2 - 1$

$= -s^2$

The expression

$$\frac{(1-2\sin^2\theta\cos^2\theta)(\cot\theta+1)\cos\theta}{(\sin^4\theta+\cos^4\theta)(1+\tan\theta)\cos ec\theta} - 1,\ 0° <$$

$\theta < 90°$, is equal to:

व्यंजक

$$\frac{(1-2\sin^2\theta\cos^2\theta)(\cot\theta+1)\cos\theta}{(\sin^4\theta+\cos^4\theta)(1+\tan\theta)\cos ec\theta} - 1$$ का मान

बताइए जहां $0° < \theta < 90°$ है।

(a) $\cos^2\theta$

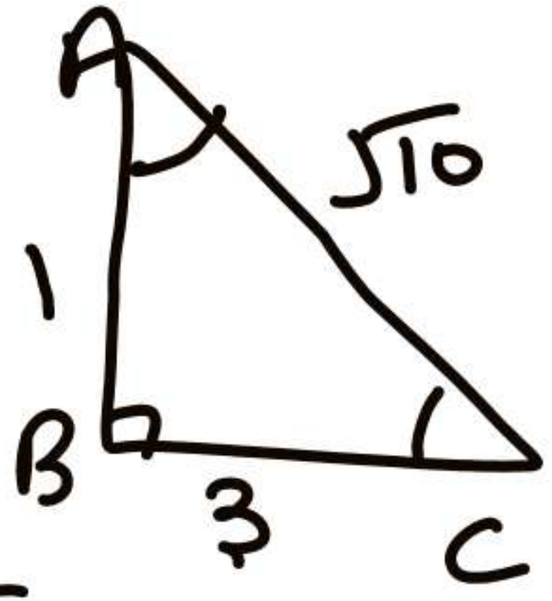
(b) $-\sin^2\theta$

(c) $\sec^2\theta$

(d) $-\sec^2\theta$

B

SSC CGL MAINS 03 Feb 2022



In ΔABC, right angled at B, if $\cot C = 3$, then $\frac{\cos C(\sin C + \sin A)}{\sin A(\sin C - \sin A)}$ is:

ΔABC में **B** पर समकोणित, यदि $\cot C = 3$ है, तो $\frac{\cos C(\sin C + \sin A)}{\sin A(\sin C - \sin A)}$ का मान इनमें से किसके बराबर होगा?

(a) -2

(b) 3

(c) $\frac{1}{2}$

(d) 1

$\cot A = \frac{1}{3}$

$\frac{\cos A}{\sin A} = \frac{1}{3}$

$A + C = 90°$

$\frac{\sin C + \cos C}{\sin C - \cos C}$

$\frac{\cos C}{\sin C} = \frac{3}{1}$

$\frac{1+3}{1-3} = -2$

SSC PHASE IX 2022

$$\frac{1}{C}\sqrt{\frac{C^2}{S^2}}$$

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

Simplify.

$$\frac{1}{\cos x}\sqrt{\frac{\cos(\pi+x)\cos(-x)}{\sin(\pi-x)\cos\left(\frac{\pi}{2}+x\right)}}$$

सरल करें

$$\frac{1}{\cos x}\sqrt{\frac{\cos(\pi+x)\cos(-x)}{\sin(\pi-x)\cos\left(\frac{\pi}{2}+x\right)}}$$

(a) sec x
(b) tan x
(c) cosec x ©
(d) cot x

SSC PHASE X 2021

If $\cos\theta = \sin(2\theta) \neq 0$, what is the value of

$\cos^4\theta + \sin^4\theta + \cos^3\theta + \sin^3\theta + \sin^2\theta + \cos^2\theta + \sin\theta + \cos\theta$?

यदि $\cos\theta = \sin(2\theta) \neq 0$ है, तो

$\cos^4\theta + \sin^4\theta + \cos^3\theta + \sin^3\theta + \sin^2\theta + \cos^2\theta + \sin\theta + \cos\theta$

का मान क्या है?

(a) $\frac{8+7\sqrt{3}}{18}$

(b) $\frac{8+7\sqrt{3}}{8}$

(c) $\frac{18+7\sqrt{3}}{8}$

(d) $\frac{7+18\sqrt{3}}{8}$

SSC PHASE X 2021

$3\theta = 90°$

$\theta = 30°$

$\frac{9}{16}+\frac{1}{16}+\frac{3\sqrt{3}}{8}+\frac{1}{8}+\frac{1}{4}+\frac{1}{4}+\frac{1}{2}+\frac{\sqrt{3}}{2}$

$\sin A = \cos B \quad A+B=90°$

$\frac{18+7\sqrt{3}}{8}$ ✓

(C)