CGL CHSL 2021

MATHS

60 दिन 60 मैराथन

08:30 PM

Trigonometry 2

1 सेकेंड वाले सवाल

20/60

Target 50/50

ADITYA RANJAN
CGL TOPPER

अब तो OFFICER बन के रहेंगे

- ✓ CHAPTERWISE
- ✓ MOCK TEST
- ✓ LATEST QUESTIONS ASKED BY TCS IN VARIOUS EXAMS
- ✓ DIVIDED ON DIFFERENT LEVELS.

अपनी मंज़िल को भुला कर जिया तो क्या जिया

है दम तुझमे तो उसे पा के दिखा

लिखे दे खून से अपने कामयाबी की कहानी

और बोल उस किस्मत को है दम तो मिटा के दिखा

Trigonometry -2

त्रिकोणमिति

Values of Trigonometric Ratios
(0°, 30°, 45°, 60° & 90°)

$$\frac{2\tan\theta}{1+\tan^2\theta}$$

$$= \frac{2\tan\theta}{\sec^2\theta} = 2 \times \frac{\sin\theta}{\cancel{\cos\theta}} \times \frac{1}{\cos^{\cancel{2}}\theta} = 2\sin\theta\cdot\cos\theta = \sin 2\theta.$$

* $$\frac{2\tan\theta}{1+\tan^2\theta} = \sin 2\theta$$

$$= \frac{2 \times \frac{1}{\sqrt{3}}}{1 - \frac{1}{3}}$$

$$= \frac{2 \times 3}{\sqrt{3} \times 2} = \sqrt{3}$$

$$\frac{2\tan 30°}{1 - \tan^2 30°} = ?$$

SSC CGL 7 June 2019 (Evening)

(a) 3

(b) $\frac{1}{3}$

(c) $\sqrt{3}$

(d) $\frac{1}{\sqrt{3}}$

$\frac{1}{4} \times \frac{1}{2} + 4 \times \frac{1}{3} + \frac{1}{2} + 0$

$= \frac{1}{8} + \frac{4}{3} + \frac{1}{2}$

$= \frac{3 + 32 + 12}{24}$

$= \frac{47}{27}$

The value of $\sin^2 30^\circ \cos^2 45^\circ + 4\tan^2 30^\circ + \frac{1}{2}\sin^2 90^\circ + 2\cos 90^\circ$ is :

SSC CGL 7 June 2019 (Evening)

(a) $\frac{15}{8}$

(b) $\frac{47}{24}$

(c) $\frac{23}{12}$

(d) 2

$$\frac{\frac{1}{\sqrt{3}} \times \frac{2}{\sqrt{3}} + \sqrt{3} \times \frac{2}{\sqrt{3}}}{\frac{1}{4} + 4 \times 1 - 4}$$

$$= \frac{\frac{2}{3} + 2}{\frac{1}{4}}$$

$$= \frac{\frac{8}{3}}{\frac{1}{4}} = \frac{32}{3}$$

The value of

$$\frac{\tan 30^\circ \operatorname{cosec} 60^\circ + \tan 60^\circ \sec 30^\circ}{\sin^2 30^\circ + 4\cot^2 45^\circ - \sec^2 60^\circ}$$ **is :**

SSC CGL 4 March 2020 (Morning)

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

(b) $\frac{32}{3}$

(c) $\frac{8}{3}$

(d) $\frac{32}{99}$

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

$$\frac{1}{7+\sqrt{5}} = \frac{7-\sqrt{5}}{24}$$

$$\frac{4\times\frac{1}{2}+4}{\sqrt{3}\times 2-4\times 1}$$

$$= \frac{6}{2\sqrt{3}-4} = \frac{3}{\sqrt{3}-2}$$

$$= \frac{3}{(\sqrt{3}-2)}\times\frac{(\sqrt{3}+2)}{(\sqrt{3}+2)}$$

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

The value of

$$\frac{\text{cosec}^2 30^\circ \sin^2 45^\circ + \sec^2 60^\circ}{\tan 60^\circ \text{cosec}^2 45^\circ - \sec^2 60^\circ \tan 45^\circ}$$ **is :**

SSC CGL 2019 Tier-II (15/10/2020)

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

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

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

(d) ✓ $-3\left(2+\sqrt{3}\right)$

If $\sin(A + B) = \frac{\sqrt{3}}{2}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$, then $(2A + 3B)$ is equal to :

SSC CPO 2018, 13 March 2019 (Morning)

(a) 120° (b) 135°

(c) 130° (d) 125°

$(A + B) = 60°$

$(A - B) = 30°$

$A = 45°$ $B = 15°$

$2A + 3B$

$= 90° + 45°$

$= 135°$

Mother of all concept

IF A + B = 90

- SIN A × SEC B = 1 or SIN A = COS B
- COS A × COSEC B = 1 or COS A = SIN B
- TAN A × TAN B = 1 or TAN A = COT B

$\tan A \cdot \tan B$

$A + B = 90^\circ$

$\tan 10^\circ . \tan 80^\circ = ?$

(a) 1 **(b) – 1**

(c) 0 **(d) 2**

SSC CGL

$\tan 39^\circ . \tan 43^\circ . \tan 47^\circ . \tan 51^\circ = ?$

(a) 1

(b) – 1

(c) 0

(d) 2

SSC CGL

$= \tan 30^\circ$

$= \frac{1}{\sqrt{3}}$

$\tan 10^\circ . \tan 20^\circ . \tan 30^\circ . \tan 40^\circ . \tan 50^\circ . \tan 70^\circ . \tan 80^\circ = ?$

(a) $\sqrt{3}$

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

(c) 1

(d) 0

SSC CGL

$\tan 1^\circ . \tan 2^\circ . \tan 3^\circ \ldots\ldots\ldots \tan 88^\circ . \tan 89^\circ = ?$

(a) 1
(b) – 1
(c) 0
(d) 2

SSC CHSL

* If $A + B = 90^\circ$

then $\tan A \cdot \tan B = 1$

$\tan 1^\circ.\tan 3^\circ.\tan 5^\circ.....\tan 87^\circ.\tan 89^\circ = ?$

(a) $\sqrt{3}$

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

(c) 1

(d) 0

SSC CGL MAINS

If tan A. tan B = 1, then A + B = ?

(a) 60°
(b) 90°
(c) 30°
(d) 120°

SSC CGL

$\theta + 2\theta = 90^\circ$

$3\theta = 90^\circ$

$\theta = 30^\circ$

$\sin 3\theta$

$= \sin 90^\circ$

$= 1$

If $\tan\theta \cdot \tan 2\theta = 1$, then $\sin 3\theta = ?$

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

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

(c) 1

(d) 0

SSC CGL

$3\theta + 6\theta = 90^\circ$

$9\theta = 90^\circ$

$\theta = 10^\circ$

$\sin 30^\circ + \cos 30^\circ$

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

If $\tan 3\theta \cdot \tan 6\theta = 1$, then $\sin 3\theta + \cos 3\theta = ?$

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

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

(c) $\sqrt{3}$

(d) $\frac{1}{\sqrt{3}}$

SSC CPO

If $\tan(\alpha + 2\beta).\tan(\alpha - 2\beta) = 1$, then $\tan\alpha + \cot\alpha = ?$

(a) 1 (b) – 1

(c) 0 (d) 2

$A + B = 90^\circ$

$2\alpha = 90^\circ$

$\alpha = 45^\circ$

1 + 1

SSC CHSL

If $A+B=90^\circ$

$\tan A \cdot \tan B = 1$

$\cot A \cdot \cot B = 1$

$\cot 10^\circ . \cot 80^\circ = ?$

(a) 1 **(b) – 1**

(c) 0 **(d) 2**

SSC CHSL

$\cot 39^\circ . \cot 43^\circ . \cot 47^\circ . \cot 51^\circ = ?$

(a) 1
(b) – 1
(c) 0
(d) 2

SSC CPO

Find the value of

cot 25° cot25° cot45° cot55° cot65°.

Cot 35° **cot25° cot45° cot55° cot65°** का मान ज्ञात करें।

SSC CGL 2020

(a) $\sqrt{3}$

(b) 1

(c) 7

(d) 5

Find the value of tan35° cot40° tan45° cot50° tan55°.

tan35° cot40° tan45° cot50° tan55° का मान ज्ञात करें।

SSC CGL 2020

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

(b) 1

(c) −1

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

$\theta + 2\theta = 90^\circ$

$3\theta = 90^\circ$

$\theta = 30^\circ$

$\sin 90^\circ$

If $\cot\theta \cdot \cot 2\theta = 1$, then $\sin 3\theta = ?$

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

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

(c) 1

(d) 0

SSC CHSL

$\alpha+2\beta+\alpha-2\beta = 90^\circ$

$2\alpha = 90^\circ$

$\alpha = 45^\circ$

If $\cot(\alpha + 2\beta).\cot(\alpha - 2\beta) = 1$, then $\cot\alpha + \tan\alpha = ?$

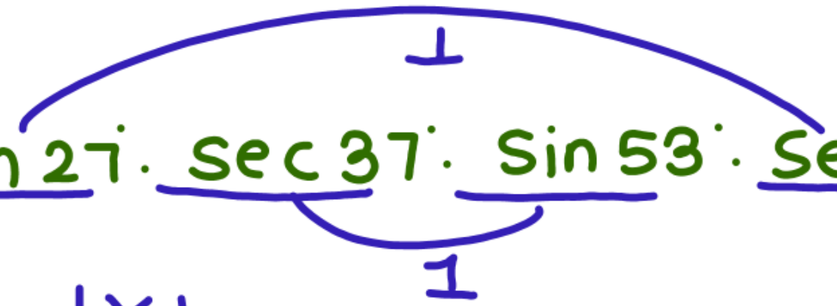
(a) 1 (b) – 1

(c) 0 (d) 2

SSC CHSL

Q. $\sin\alpha \cdot \sec\beta = 1$ $\quad \alpha+\beta = ?$

$= 90^\circ$



Q. $\sin 27^\circ \cdot \sec 37^\circ \cdot \sin 53^\circ \cdot \sec 63^\circ$

$= 1 \times 1$

$= 1$

Q. $\sin 30^\circ \cdot \sec 60^\circ \cdot \sin 45^\circ \cdot \sec 45^\circ \sin 10^\circ \cdot \sec 80^\circ$

$1 \times 1 \times 1 = 1$

Q. $\cos 10^\circ \cdot \operatorname{cosec} 80^\circ \cos 12^\circ \operatorname{cosec} 78^\circ \cos 30^\circ \operatorname{cosec} 60^\circ$

$1 \times 1 \times 1$

$= 1$

If $A + B = 90^\circ$

Mother

* $\sin A \times \sec B = 1$
* $\cos A \times \operatorname{cosec} B = 1$
* $\tan A \times \tan B = 1$
* $\cot A \times \cot B = 1$

Father

$\sin A = \cos B$

$\operatorname{cosec} A = \sec B$

$\tan A = \cot B$

Father of all concepts

IF A + B = 90°

- $\sin a \times \sec b = 1$ or $\sin a = \cos b$
- $\cos a \times \operatorname{cosec} b = 1$ or $\cos a = \sin b$
- $\tan a \times \tan b = 1$ or $\tan a = \cot b$

If $\sin(\theta + 10^\circ) = \cos(\theta + 20^\circ)$, then θ = ?

(a) 30° (b) 40°

(c) 50° (d) 60°

$2\theta + 30^\circ = 90^\circ$

$2\theta = 60^\circ$

$\theta = 30^\circ$

SSC CGL

If $\sin(\theta - 10^\circ) = \cos(\theta - 20^\circ)$, then θ = ?

(a) 30° **(b) 40°**

(c) 50° **(d) 60°**

$2\theta - 30^\circ = 90^\circ$

$2\theta = 120^\circ$

$\theta = 60^\circ$

SSC CGL

Current Affairs

** Last 6 month (3) + 3

- कहाँ → Book / YouTube
- कब से पढ़ें
- कैसे

Quiz

	CGL	CHSL
	April	May
Oct, Nov, Dec	→ Monthly	
*** Jan, Feb, March	Daily	

$20+x+60=90^\circ$

$x=10^\circ$

$2\sin^2 45^\circ - \operatorname{cosec}^2 30^\circ$

$= 2\times\frac{1}{2} - 4$

$= -3$

If $\sin(20 + x)^\circ = \cos 60^\circ$, $0 \le (20 + x) \le 90$, then find the value of $2\sin^2(3x + 15)^\circ - \operatorname{cosec}^2(2x + 10)^\circ$.

यदि $\sin(20 + x)^\circ = \cos 60^\circ$, $0 \le (20 + x) \le 90$, है, तो $2\sin^2(3x + 15)^\circ - \operatorname{cosec}^2(2x + 10)^\circ$ का मान ज्ञात करें।

SSC CGL 2020

(a) 3

(b) –3

(c) –2

(d) $-\frac{1}{3}$

$2\theta + 54 + \theta = 90$

$3\theta = 36$

$\theta = 12$

$$= \frac{1}{\cot 60 + \sec 30}$$

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

$$= \frac{\sqrt{3}}{3}$$

If $\cos(2\theta + 54^\circ) = \sin\theta$, $0^\circ < (2\theta + 54^\circ) < 90^\circ$, then what is the value of $\dfrac{1}{\cot 5\theta + \sec\dfrac{5\theta}{2}}$?

यदि $\cos(2\theta + 54^\circ) = \sin\theta$, $0^\circ < (2\theta + 54^\circ) < 90^\circ$ है, तो $\dfrac{1}{\cot 5\theta + \sec\dfrac{5\theta}{2}}$ का मान ज्ञात करें।

SSC CGL 2020

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

(b) $\frac{1}{3}$

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

(d) $2\sqrt{3}$

If $\tan(x + 5°) = \cot(x + 5°)$, then x = ?

(a) 30°
(b) 40°
(c) 50°
(d) 60°

$2x + 10 = 90°$

$2x = 80°$

$x = 40°$

SSC CGL

If $\sec(x + 25°) = \text{cosec}(x + 5°)$, then x = ?

(a) 30° (b) 40°

(c) 50° (d) 60°

$2x + 30° = 90°$

$2x = 60°$

$x = 30°$

SSC CHSL

If $\cot(x - 5^\circ) = \tan(x - 25^\circ)$, then x = ?

(a) 30° (b) 40°

(c) 50° (d) 60°

SSC CPO

If Sin θ = Cos (θ + 50°), then θ = ?

SSC CGL 11 June 2019 (Afternoon)

$2\theta + 50 = 90$

$2\theta = 40$

$\theta = 20$

(a) 20°

(b) 25°

(c) 30°

(d) 35°

If Sec 4□ = Cosec (□ + 20°), then □ = ?

SSC CGL 10 June 2019 (Afternoon)

(a) 22°

(b) 18°

(c) 14°

(d) 20°

If Cosec 3α = Sec $(2\alpha + 20^\circ)$, then α = ?

SSC CGL 12 June 2019 (Afternoon)

$3\alpha + 2\alpha + 20^\circ = 90^\circ$

$5\alpha = 70^\circ$

$\alpha = 14^\circ$

(a) 30°

(b) 20°

(c) 15°

(d) 14°

If Sec 2x = Cosec (3x – 45°), then x = ?

SSC CPO 13 March 2019 (Evening)

$5x - 45^\circ = 90^\circ$

$5x = 135^\circ$

$x = 27^\circ$

(a) 40°

(b) 45°

(c) 27°

(d) 35°

If Sec 3x = Cosec (3x – 45°), where 3x is an acute angle then x = ?

SSC CPO 23 Nov. 2020 (Evening)

$6x - 45^\circ = 90^\circ$

$6x = 135^\circ$

$x = 22.5^\circ$

(a) 35°

(b) 27.5°

(c) 22.5°

(d) 45°

If Tan 4θ = Cot $(2\theta + 30^\circ)$, then θ = ?

SSC CGL 11 June 2019 (Morning)

$6\theta + 30 = 90^\circ$

$6\theta = 60^\circ$

$\theta = 10^\circ$

(a) 15°

(b) 10°

(c) 20°

(d) 25°

If Tan 4 A = Cot (A – 20°), then A = ?

SSC CHSL 16 OCTOBER 2020 (Afternoon)

$5A - 20 = 90^\circ$

$5A = 110^\circ$

$A = 22^\circ$

(a) 22°
(b) 80°
(c) 05°
(d) 14°

If Tan x = Cot (6x + 60°), then x = ?

SSC CHSL 3 JULY 2019 (Evening)

Ans in Comment Box

(a) 10°

(b) 30°/7

(c) 15°/2

(d) 12°

Fees 699/-

SSC Exams

MATHS SPECIAL

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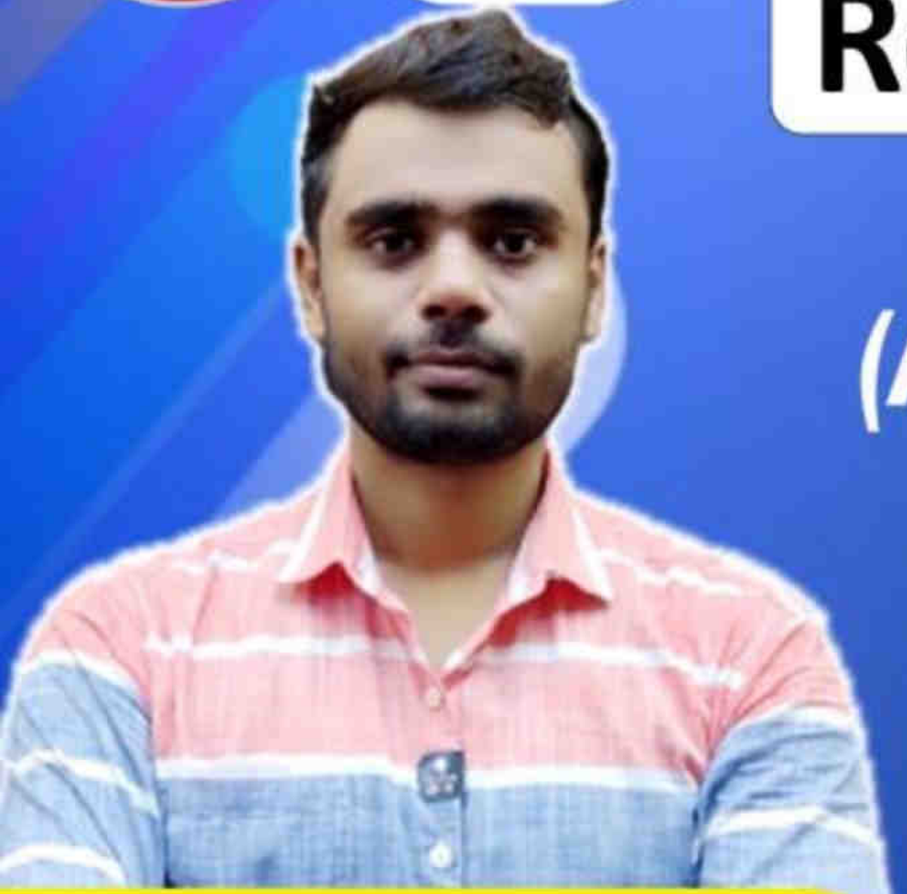
Recorded Batch



PRE + MAINS

(Arithmetic + Advance)

For All Exam

8506003399/11
9289079800

VALIDITY - LIFETIME

- SMART APPROACH
- UPDATES SHEETS
- PDF (BILINGUAL)
- CLASS NOTES (BILINGUAL)

ADITYA RANJAN
(MATHS EXPERT)

२०१९

M+E+R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