



DSSSB TGT

PART (A+B)



MATHS

TRIGNOMETRIC RATIO & IDENTITIES

Part -3



20/05/2024 04:00PM



Imp

$$\# \sin C + \sin D = 2 \sin \frac{C+D}{2} \cdot \cos \frac{C-D}{2}$$

$$\# \sin C - \sin D = 2 \cos \frac{C+D}{2} \cdot \sin \frac{C-D}{2}$$

$$\# \cos C + \cos D = 2 \cos \frac{C+D}{2} \cdot \cos \frac{C-D}{2}$$

$$\# \cos C - \cos D = 2 \sin \frac{C+D}{2} \cdot \sin \frac{D-C}{2}$$

$$\# 2\sin A \cdot \cos B = \sin(A+B) + \sin(A-B)$$

$$\# 2\cos A \cdot \sin B = \sin(A+B) - \sin(A-B)$$

$$\# 2\cos A \cdot \cos B = \cos(A+B) + \cos(A-B)$$

$$\# 2\sin A \cdot \sin B = \cos(A-B) - \cos(A+B)$$


$$\# \sin 2A = 2 \sin A \cdot \cos A = \frac{2 \tan A}{1 + \tan^2 A}$$

$$\# \cos 2A = \cos^2 A - \sin^2 A = 1 - 2 \sin^2 A$$
$$= 2 \cos^2 A - 1 = \frac{1 - \tan^2 A}{1 + \tan^2 A}$$

$$\Rightarrow \# \tan 2A = \frac{2 \tan A}{1 - \tan^2 A}$$

$$\# \cot 2A = \frac{\cot^2 A - 1}{2 \cot A}$$

$\sec\theta = \frac{13}{5}$ → कर्ण 13, आधार 5, लम्ब = 12
 PBP लाल
 HNB कृष्ण
 1

1. If $\sec\theta = \frac{13}{5}$ then the value of $\frac{10\tan\theta + 24\operatorname{cosec}\theta}{39\sin\theta - 10\sec\theta}$ is:

अगर $\sec\theta = \frac{13}{5}$ हो, तो $\frac{10\tan\theta + 24\operatorname{cosec}\theta}{39\sin\theta - 10\sec\theta}$ का मान

क्या होगा?

(a) 2

(b) $\frac{1}{5}$

(c) 3

(d) 5

$$\frac{10 \times \frac{\text{लम्ब}}{\text{आधार}} + 24 \times \frac{\text{कर्ण}}{\text{लम्ब}}}{39 \times \frac{\text{लम्ब}}{\text{कर्ण}} - 10 \times \frac{13}{5}}$$

$$\Rightarrow \frac{\frac{10 \times 12}{5} + 24 \times \frac{13}{12}}{39 \times \frac{12}{13} - 26} = \frac{50}{10} = 5$$

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

$$\alpha = 2\beta \Rightarrow$$

$$3\cos^2\alpha - 2\sin^2\beta = ?$$

$$3\cos^2(90^\circ - \beta) - 2\sin^2\beta$$

$$3\sin^2\beta - 2\sin^2\beta$$

$$\sin^2\beta$$

$$\sin^2 30^\circ$$

$$\Rightarrow \left(\frac{1}{2}\right)^2 = \frac{1}{4}$$

2. If $\alpha + \beta = 90^\circ$ and, $\alpha = 2\beta$, then the value of $3\cos^2\alpha - 2\sin^2\beta$ is equal to:

यदि $\alpha + \beta = 90^\circ$ और $\alpha = 2\beta$ है, तो $3\cos^2\alpha - 2\sin^2\beta$ का मान ज्ञात कीजिए।

(a) $\frac{4}{3}$

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

(b) $\frac{3}{4}$

(d) $\frac{1}{4}$

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

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

$$\beta = 30^\circ$$

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

$$\alpha = 2\beta$$

$$\beta = 30^\circ$$

$$\alpha = 60^\circ$$

$$3\cos^2\alpha - 2\sin^2\beta$$

$$3 \cdot \frac{1}{4} - 2 \cdot \frac{1}{4} \Rightarrow \frac{1}{4}$$

$$\frac{2 \cot\left(\frac{\pi-A}{2}\right)}{1 + \tan^2\left(\frac{2\pi+A}{2}\right)} = ?$$

$$\begin{aligned} & \frac{2 \cot\left(\frac{\pi}{2} - \frac{A}{2}\right)}{1 + \tan^2\left(\frac{2\pi}{2} + \frac{A}{2}\right)} \\ & \Rightarrow \frac{2 \cot\left(90^\circ - \frac{A}{2}\right)}{1 + \tan^2\left(180^\circ + \frac{A}{2}\right)} \end{aligned}$$

3. What is the value of $[2 \cot(\pi - A)/2]/[1 + \tan^2(2\pi + A)/2]$?

$[2 \cot(\pi - A)/2]/[1 + \tan^2(2\pi + A)/2]$ का मान क्या है?

(a) $2 \sin^2 A/2$

(b) $\cos A$

(c) $\sin A$

(d) $2 \cos^2 A/2$

Imp $\rightarrow$ Tan, Cot

$$\frac{2 \tan \frac{A}{2}}{1 + \tan^2 \frac{A}{2}} = \frac{2 \tan \frac{A}{2}}{1 + \tan^2 \frac{A}{2}}$$

$$= \sin A$$

~~$\frac{A}{2} \times 2$~~
 A

$$\sin(A+B)$$

$$\sin A \cdot \cos B + \cos A \cdot \sin B$$

$$\frac{\sin 23^\circ \cdot \cos 67^\circ \times 1 + \cos 23^\circ \cdot \sin 67^\circ \times 1}{\cancel{\frac{1}{\sqrt{2}} \cdot \frac{1}{\sqrt{2}}}}$$

$$\frac{1}{\sqrt{2}} \cdot \frac{1}{\sqrt{2}}$$

$$\sin^A 23^\circ \cdot \cos^B 67^\circ + \cos^A 23^\circ \cdot \sin^B 67^\circ$$

$$\sin(23+67)$$

$$\sin(90) = 1$$

4. The

value

of

$$\frac{\sin 23^\circ \cos 67^\circ \tan 45^\circ + \cos 23^\circ \sin 67^\circ \cot 45^\circ}{2 \sin 45^\circ \cos 45^\circ}$$

$$\frac{\sin 23^\circ \cos 67^\circ \tan 45^\circ + \cos 23^\circ \sin 67^\circ \cot 45^\circ}{2 \sin 45^\circ \cos 45^\circ}$$

का

मान है :

(a) 0

(b) 2

(c) 1

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

$$\boxed{\operatorname{cosec}(90-28)} \quad \begin{array}{c} 90 \\ 28 \\ \hline 62 \end{array}$$

$$A = \frac{\operatorname{cosec} 62^\circ \cdot \tan 11^\circ}{\tan 62^\circ \cdot \sec 28^\circ \cdot \cot 38^\circ}$$

$$\Rightarrow \frac{\cancel{\operatorname{cosec}(90-28)} \cdot \tan 11^\circ}{\tan 62^\circ \cdot \cancel{\sec 28^\circ} \cdot \cot 38^\circ}$$

$$\Rightarrow \frac{\tan 11^\circ}{\tan 62^\circ \cdot \tan 52^\circ}$$

$$\Rightarrow \frac{\cot 62^\circ \cdot \cot 52^\circ}{\cot 11^\circ}$$

$$\Rightarrow \frac{\tan 28^\circ \cdot \tan 38^\circ}{\tan 79^\circ}$$

5. Which of the following values 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?

$$90-38 \Rightarrow 52$$

समीकरण $\frac{A \tan 62^\circ \sec 28^\circ \cot 38^\circ}{\operatorname{cosec} 62^\circ \tan 11^\circ} = 1$ सही करने के लिए A का निम्नलिखित में से कौन-सा मान उपयुक्त होगा?

(a) $\frac{\tan 38^\circ}{\tan 79^\circ \tan 28^\circ}$

(c) $\frac{\tan 28^\circ \tan 79^\circ}{\tan 38^\circ}$

(b) $\frac{\tan 38^\circ \tan 79^\circ}{\tan 28^\circ}$

(d) $\frac{\tan 28^\circ \tan 38^\circ}{\tan 79^\circ}$

@aakashsirwa

@mamteshsirwa

* यदि $\sin A = \cos B$
तो $A + B = 90^\circ$ होगा।

$$2x - 45 + x = 90$$

$$3x = 135$$

$$x = 45$$

6. If $\sin(2x - 45^\circ) = \cos x$ and angle x and $(2x - 45^\circ)$ (in degrees) are acute angles, then the value of $\cot x$ is:

यदि $\sin(2x - 45^\circ) = \cos x$ और कोण x और $(2x - 45^\circ)$ (डिग्री में) न्यूनकोण हैं, तो $\cot x$ का मान है :

(a) 0

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

(c) 1

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

$\cot 45^\circ$
1

7. Find the value of $\sin(60+\theta) - \cos(30-\theta)$.

$\sin(60+\theta) - \cos(30-\theta)$ का मान ज्ञात करें।

$$\sin(A+B)$$

$$= \sin A \cdot \cos B + \cos A \cdot \sin B \quad (a) \quad 1$$

$$\sin 60 \cdot \cos \theta + \cos 60 \cdot \sin \theta \quad (b) \quad \frac{1}{2}$$

$$- [\cos 30 \cdot (\cos \theta + \sin 30 \cdot \sin \theta)] \quad (c) \quad 0$$

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

$$\cos(A-B) = \cos A \cdot \cos B + \sin A \cdot \sin B$$

$$\sin(60+\theta) - \cos(30-\theta)$$

$$\sin [90 - (30-\theta)] - \cos(30-\theta)$$

$$\cos(30-\theta) - \cos(30-\theta)$$

0

$$\frac{25}{36}$$

$$6 \tan A = 5$$

$$\tan A = \frac{5}{6} \rightarrow \text{अस्य}$$

$$6 \rightarrow \text{आधार}$$

$$\text{कृण} = \sqrt{61}$$

8. If A lies in the first quadrant and $\tan A = 5$, then the value of $\frac{8\sin A - 4\cos A}{\cos A + 2\sin A}$ is:

यदि A प्रथम चतुर्थांश में अवस्थित है और $6 \tan A = 5$ है, तो $\frac{8\sin A - 4\cos A}{\cos A + 2\sin A}$ का मान बताइए।

(a) 4

(b) 16

(c) -2

(d) 1

$$\frac{8 \cdot \frac{P}{H} - 4 \cdot \frac{B}{H}}{\frac{B}{H} + 2 \cdot \frac{P}{H}}$$

$$\frac{8 \cdot \frac{5}{\sqrt{61}} - 4 \times \frac{6}{\sqrt{61}}}{\frac{6}{\sqrt{61}} + 2 \times \frac{5}{\sqrt{61}}} \Rightarrow \frac{40 - 24}{6 + 10} \Rightarrow \frac{16}{16} = 1$$

9. If $7\cos^2\theta + 3\sin^2\theta = 6$, $0^\circ < \theta < 90^\circ$ then the value of $\frac{\cot^2 2\theta + \sec^2 2\theta}{\tan^2 2\theta - \sin^2 2\theta}$ is.

यदि $7\cos^2\theta + 3\sin^2\theta = 6$, $0^\circ < \theta < 90^\circ$ हो, तो $\frac{\cot^2 2\theta + \sec^2 2\theta}{\tan^2 2\theta - \sin^2 2\theta}$ का मान..... है-

H.W.

(a) $\frac{49}{45}$

(b) $\frac{28}{27}$

(c) $\frac{52}{27}$

(d) $\frac{26}{15}$