

Trigonometry

(त्रिकोणमिति)



$$\text{ctg} \alpha = 1$$

$$\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$$

$$\text{tg} \alpha \cdot \text{ctg} \alpha = 1$$

$$\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$$

$$\text{tg} \alpha = \frac{\sin \alpha}{\cos \alpha}$$

$$\sin^2 \alpha + \cos^2 \alpha = 1$$

$$\text{tg} \alpha = \frac{\sin \alpha}{\cos \alpha}$$

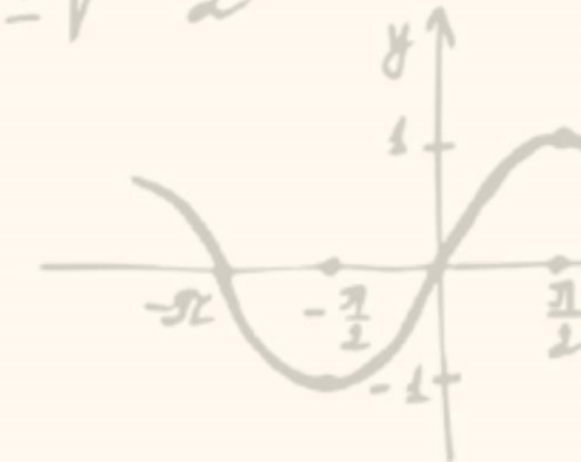
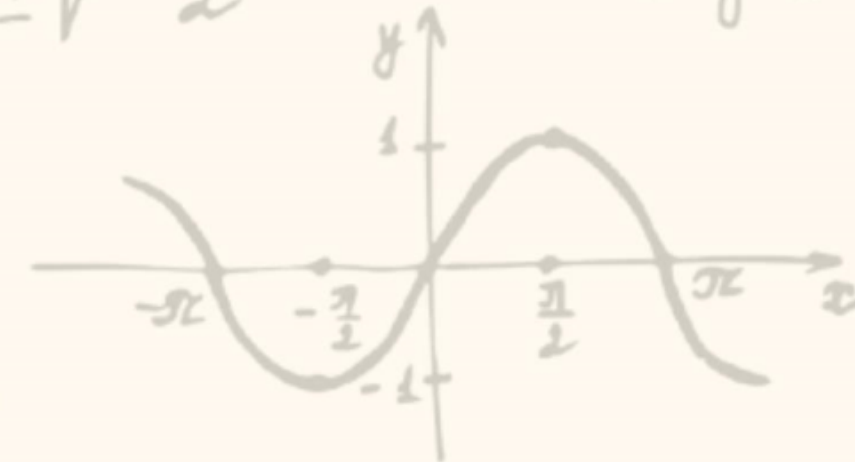
$$\sin^2 \alpha + \cos^2 \alpha = 1$$

$$\sin \frac{\alpha}{2} = \pm \sqrt{\frac{1 - \cos \alpha}{2}}$$

$$\text{ctg} \frac{\pi}{3} = \frac{1}{\sqrt{3}}$$

$$\sin \frac{\alpha}{2} = \pm \sqrt{\frac{1 - \cos \alpha}{2}}$$

$$\text{ctg} \frac{\pi}{3} = \frac{1}{\sqrt{3}}$$





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

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

दोनों को multiply करने पर

$$\begin{aligned}\sin(A+B) \cdot \sin(A-B) &= \sin^2 A \cdot \cos^2 B - \cos^2 A \cdot \sin^2 B \\ &= \sin^2 A \cdot (1 - \sin^2 B) - (1 - \sin^2 A) \cdot \sin^2 B\end{aligned}$$

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

$$= 1 - \cos^2 A - (1 - \cos^2 B)$$

$$= 1 - \cos^2 A - 1 + \cos^2 B$$

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

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





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

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

दोनों का multiply करने पर

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

$$= 1 - \sin^2 A - (1 - \cos^2 B)$$

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



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



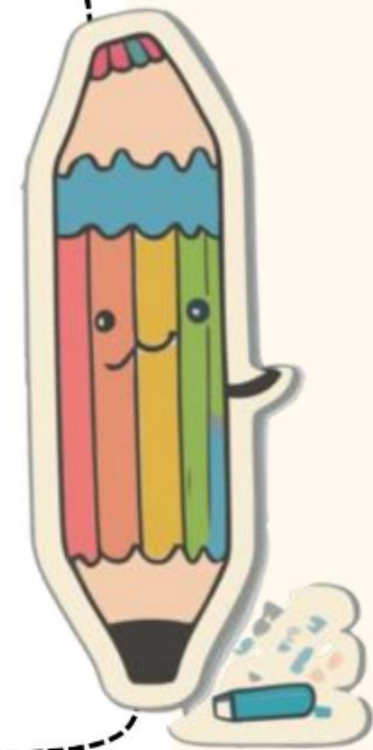


$$\sin(A+B) + \sin(A-B) = 2\sin A \cdot \cos B$$

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

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

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



C & D FORMULAS



Put, $A+B=C$ & $A-B=D$

$$A = \frac{C+D}{2}$$

$$B = \frac{C-D}{2}$$

$$\sin C + \sin D =$$

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

$$\sin C - \sin D =$$

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

$$\cos C + \cos D =$$

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

$$\cos C - \cos D =$$

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

*





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



$\cos A \cdot \cos B$ से भाग देने पर

$$\tan(A+B) = \frac{\sin A \cdot \cos B + \cos A \cdot \sin B / \cos A \cdot \cos B}{\cos A \cdot \cos B - \sin A \cdot \sin B / \cos A \cdot \cos B}$$

$$\begin{aligned} \times \tan(A+B) &= \frac{\tan A + \tan B}{1 - \tan A \cdot \tan B} \\ \times \tan(A-B) &= \frac{\tan A - \tan B}{1 + \tan A \cdot \tan B} \end{aligned}$$

$$\cot(A+B) = \frac{\cot A \cdot \cot B - 1}{\cot B + \cot A}$$

$$\cot(A-B) = \frac{\cot A \cdot \cot B + 1}{\cot B - \cot A}$$

$$\left\{ \begin{aligned} &\frac{\tan^2 A - \tan^2 B}{1 - \tan A \tan B} \\ &= \tan(A+B) \cdot \tan(A-B) \end{aligned} \right\}$$



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

Put B=A

$$\sin 2A = 2 \sin A \cdot \cos A = \frac{2 \sin A \cdot \cos A}{1}$$

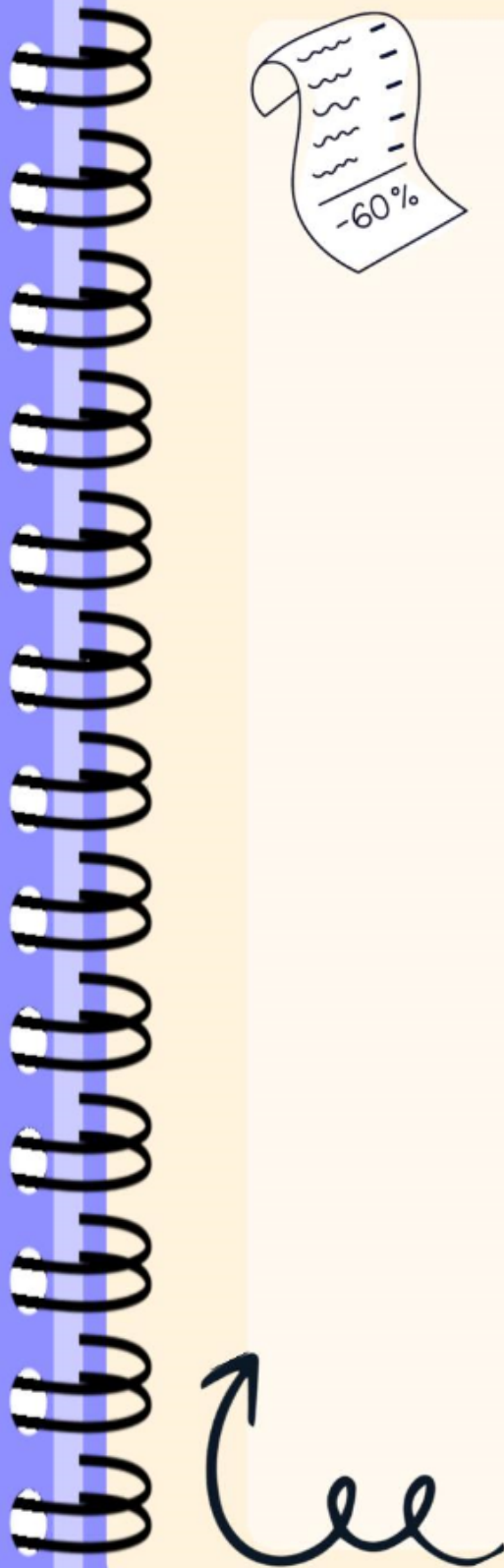
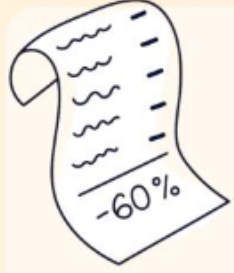
$$\sin 2A = \frac{2 \sin A \cdot \cos A}{\sin^2 A + \cos^2 A}$$

अंश व हर में $\cos^2 A$ से भाग देने पर

$$\sin 2A = \frac{\frac{2 \sin A \cdot \cancel{\cos A}}{\cancel{\cos^2 A}}}{\frac{\sin^2 A + \cos^2 A}{\cos^2 A}}$$

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

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



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



Put $B=A$

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$= \cos^2 A - (1 - \cos^2 A)$$

$$= 2\cos^2 A - 1$$

$$\cos 2A = \cos^2 A - \sin^2 A$$

$$= (1 - \sin^2 A) - \sin^2 A$$

$$= 1 - 2\sin^2 A$$

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

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



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



ଓଡ଼ିଆ = ଶୁଣିବା




$$\cos 2A = 2\cos^2 A - 1$$

$$2\cos^2 A = 1 + \cos 2A \quad \checkmark$$

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

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

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

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

$$1 + \cos 2A = 2\cos^2 A$$

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





Put $B=A$

$$\tan(A+B) = \frac{\tan A + \tan B}{1 - \tan A \cdot \tan B}$$

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

$$\sin 3A = 3 \sin A - 4 \sin^3 A$$

$$\cos 3A = 4 \cos^3 A - 3 \cos A$$





$$\sin 75^\circ = \cos 15^\circ = \frac{\sqrt{3} + 1}{2\sqrt{2}}$$

$$75^\circ = 45^\circ + 30^\circ$$
$$15^\circ = 45^\circ - 30^\circ$$



$$\sin 75^\circ = \sin(\underbrace{45^\circ}_A + \underbrace{30^\circ}_B) = \sin 45^\circ \cdot \cos 30^\circ + \cos 45^\circ \cdot \sin 30^\circ$$

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

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





$$\sin 15^\circ = \cos 75^\circ = \frac{\sqrt{3} - 1}{2\sqrt{2}}$$



$$\begin{aligned} \sin 15^\circ &= \sin(\underbrace{45^\circ}_A - \underbrace{30^\circ}_B) = \sin 45^\circ \cdot \cos 30^\circ - \cos 45^\circ \cdot \sin 30^\circ \\ &= \frac{1}{\sqrt{2}} \times \frac{\sqrt{3}}{2} - \frac{1}{\sqrt{2}} \times \frac{1}{2} \\ &= \frac{\sqrt{3} - 1}{2\sqrt{2}} \end{aligned}$$



$$\tan 75^\circ = \cot 15^\circ = \frac{\sqrt{3}+1}{\sqrt{3}-1} = 2 + \sqrt{3}$$

$$\tan 75^\circ = \frac{\sin 75^\circ}{\cos 75^\circ} = \frac{\sqrt{3}+1}{\sqrt{3}-1} \times \frac{\sqrt{3}+1}{\sqrt{3}+1} = \frac{4+2\sqrt{3}}{2} = 2 + \sqrt{3}$$

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

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

$$\tan 15^\circ \times \tan 75^\circ = 1$$

$$\tan 15^\circ = \cot 75^\circ = \frac{\sqrt{3}-1}{\sqrt{3}+1} = 2 - \sqrt{3}$$

$$\operatorname{cosec} 15^\circ = \frac{1}{\sin 15^\circ} = \frac{\frac{2\sqrt{2}}{\sqrt{3}-1}}{\frac{\sqrt{3}+1}{\sqrt{3}+1}} = \sqrt{6} + \sqrt{2}$$

15. If $\cos\theta = \frac{5}{13}$ and $\cos\phi = \frac{12}{13}$, then $\cos\frac{(\theta-\phi)}{2} = ?$

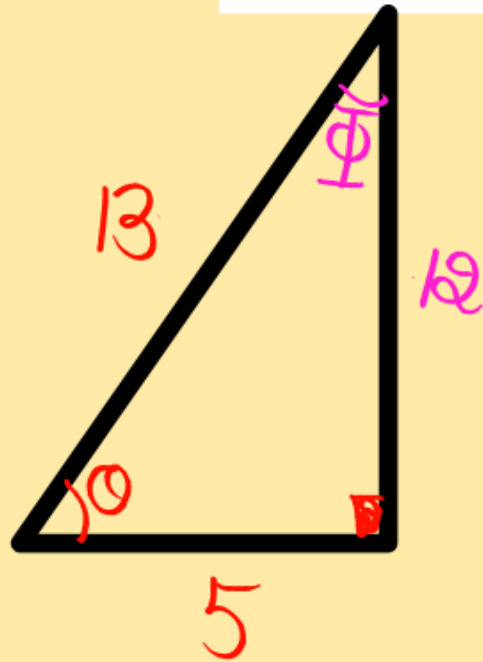
यदि $\cos\theta = \frac{5}{13}$, $\cos\phi = \frac{12}{13}$ है, तब $\cos\frac{(\theta-\phi)}{2} = ?$

[A] $\frac{17}{13}$

~~[C] $\frac{17}{13\sqrt{2}}$~~

[B] $\frac{13}{17\sqrt{2}}$

[D] $\frac{7}{13\sqrt{2}}$



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

$$\theta = 90^\circ - \phi$$

$$\begin{aligned} & \cos\left(\frac{90^\circ - 2\phi}{2}\right) \\ &= \cos(45^\circ - \phi) \\ &= \frac{1}{\sqrt{2}} \times \frac{12}{13} + \frac{1}{\sqrt{2}} \times \frac{5}{13} \\ &= \frac{17}{13\sqrt{2}} \end{aligned}$$



16. If $\sin A + \sin B = x$ and $\cos A + \cos B = y$, then find $\cos(A-B)$?

यदि $\sin A + \sin B = x$ & $\cos A + \cos B = y$ है, तो $\cos(A-B)$ का मान ज्ञात कीजिये?

SSC CGL PRE 2024

[A] $\frac{x^2 + y^2 + 2}{2}$

[C] $\frac{x^2 - y^2 - 2}{2}$

[B] $\frac{x^2 - y^2 + 2}{2}$

[D] $\frac{x^2 + y^2 - 2}{2}$

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

=

square & add

$$1 + 1 + 2(\sin A \sin B + \cos A \cos B) = x^2 + y^2$$

$$\cos(A-B) = \frac{x^2 + y^2 - 2}{2}$$



17. Find the value of $\alpha + \beta$, if $\sin\alpha = \frac{1}{\sqrt{5}}$ and $\cos\beta = \frac{3}{\sqrt{10}}$,
यदि $\sin\alpha = \frac{1}{\sqrt{5}}$ तथा $\cos\beta = \frac{3}{\sqrt{10}}$ हो, तो $\alpha + \beta$, का मान ज्ञात कीजिए।

RRB NTPC 2021

- [A] 60° $\sqrt{1-\frac{1}{5}}$ $\sqrt{1-\frac{9}{10}}$ [B] 90°
[C] 45° [D] 30°

$$\sin(\underbrace{\alpha + \beta}_{45^\circ}) = \sin\alpha \cdot \cos\beta + \cos\alpha \cdot \sin\beta$$

$$= \frac{1}{\sqrt{5}} \times \frac{3}{\sqrt{10}} + \frac{2}{\sqrt{5}} \times \frac{1}{\sqrt{10}}$$

$$= \frac{5}{\sqrt{50}} = \frac{5}{5\sqrt{2}} = \frac{1}{\sqrt{2}}$$



18. $(\sin x \cos y + \cos x \sin y) \cdot (\sin x \cos y - \cos x \sin y) = ?$

[A] $\cos^2 y - \cos^2 x$

[B] $\cos^2 x - \sin^2 y$

[C] $\sin^2 x - \cos^2 y$

[D] $\sin^2 y - \sin^2 x$

$\sin(x+y) \times \sin(x-y)$



19. $\frac{\cos^2 33^\circ - \cos^2 57^\circ}{\sin^2 \frac{21^\circ}{2} - \sin^2 \frac{69^\circ}{2}} = ?$

[A] $\sqrt{2}$ ✗

[C] $\sqrt{3}$ ✗

✓ [B] $-\sqrt{2}$

[D] $-\sqrt{3}$

$$= \frac{\sin 90^\circ \times \cancel{\sin 24^\circ}}{\sin 45^\circ \times \cancel{\sin(24^\circ)}}$$

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



20. $\cos(36^\circ - A)\cos(36^\circ + A) + \cos(54^\circ + A)\cos(54^\circ - A) = ?$

[A] $\cos 2A$

[B] $\cot 2A$

[C] $\sin 2A$

[D] $\cos 108^\circ$

$$\cos 36^\circ - \sin^2 A + \cos 54^\circ - \sin^2 A$$

$$= 1 - 2\sin^2 A$$

$$= \cos 2A$$



20. $\cos(36^\circ - A)\cos(36^\circ + A) + \cos(54^\circ + A)\cos(54^\circ - A) = ?$

[A] $\cos 2A$ ✓

[B] ~~$\cot 2A$~~

[C] ~~$\sin 2A$~~

[D] ~~$\cos 108^\circ$~~

put $A = 0^\circ$

①



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

$\cos 2A \cos 2B + \sin^2(A - B) - \sin^2(A + B)$ का मान क्या है?

[A] $\sin(2A - 2B)$

[B] $\sin(2A + 2B)$

[C] $\cos(2A + 2B)$

[D] $\cos(2A - 2B)$

$\cos 2A \cdot \cos 2B - \sin 2A \cdot \sin 2B$



22. $\sin A \sin B =$ _____

[A] $\frac{1}{2} \{ \sin(A + B) + \sin(A - B) \}$

[B] $\frac{1}{2} \{ \sin(A + B) - \sin(A - B) \}$

[C] $\frac{1}{2} \{ \cos(A + B) - \cos(A - B) \}$

[D] $\frac{1}{2} \{ \cos(A - B) - \cos(A + B) \}$

Product
formulas

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



23. What is the value of $\cos(x+y) - \sin(x-y) + \tan(2z)$?

$\cos(x+y) - \sin(x-y) + \tan(2z)$ का मान क्या है?

SSC CHSL PRE 2024

- [A] $\cos x \cdot \cos y - \sin x \cdot \sin y - \sin x \cdot \cos y - \cos x \cdot \sin y + \frac{2 \tan z}{1 - \tan^2 z}$
- [B] $(\cos x \cdot \cos y - \sin x \cdot \sin y) - \sin x \cdot \cos y + \cos x \cdot \sin y + \frac{2 \tan z}{1 - \tan^2 z}$
- [C] $\cos x \cdot \cos y - \sin x \cdot \sin y - \cos x \cdot \sin y + \frac{2 \tan z}{1 - \tan^2 z}$
- [D] $\sin x \cdot \sin y + \frac{2 \tan z}{1 - \tan^2 z}$



24. What is $\sin\alpha - \sin\beta$?

$\sin\alpha - \sin\beta$ क्या है?

✓ **[A] $2\cos\frac{\alpha+\beta}{2} \sin\frac{\alpha-\beta}{2}$**

[B] $2\sin\frac{\alpha+\beta}{2} \sin\frac{\alpha-\beta}{2}$

[C] $2\cos\frac{\alpha-\beta}{2} \sin\frac{\alpha+\beta}{2}$

[D] $2\cos\frac{\alpha+\beta}{2} \cos\frac{\alpha-\beta}{2}$

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



25.

$$\frac{\overset{C}{\cos 40^\circ} - \overset{D}{\cos 140^\circ}}{\overset{C}{\sin 80^\circ} + \overset{D}{\sin 20^\circ}} = ?$$

[A] $\sqrt{\frac{3}{2}}$

[C] $\frac{\sqrt{3}}{2}$

✓ [B] $\frac{2}{\sqrt{3}}$

[D] $\sqrt{\frac{2}{3}}$

~~$\frac{2 \sin 90^\circ \cdot \sin 50^\circ}{2 \sin 50^\circ \cdot \cos 30^\circ}$~~

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



26.
$$\frac{\tan^2 52\frac{1}{2}^\circ - \tan^2 7\frac{1}{2}^\circ}{1 - \tan^2 52\frac{1}{2}^\circ \cdot \tan^2 7\frac{1}{2}^\circ} = ?$$

[A] $\frac{1}{\sqrt{3}}$

[C] $\frac{2}{\sqrt{3}}$

[B] $\sqrt{3}$

[D] $\frac{\sqrt{3}}{2}$

$\tan 60^\circ \times \tan 45^\circ$
 $= \sqrt{3} \times 1$



27. Solve the given equation-
दिए गए समीकरण को हल कीजिए-
 $\sin 21^\circ \cos 9^\circ - \cos 84^\circ \cos 6^\circ = ?$

[RRB NTPC - 2021]

[A] $\frac{1}{8}$

[C] 1

[B] $\frac{1}{2}$

[D] $\frac{1}{4}$

$$\frac{1}{2} \times [2 \sin 21^\circ \cos 9^\circ - 2 \sin 6^\circ \cos 86^\circ]$$

$$= \frac{1}{2} [\cancel{\sin 30^\circ + \sin 12^\circ} - \cancel{\sin 12^\circ}]$$

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



28.

$$\frac{2 \sin(45+\theta) \cdot \sin(45-\theta)}{\cos 2\theta} = ?$$

[A] ~~0~~

[C] ~~$\cot \theta$~~

[B] ~~$\tan 2\theta$~~

[D] 1

put $\theta = 0^\circ$

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



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

यदि $\frac{\sin A \cdot \sin B}{\cos A \cos B} + \frac{\cos x}{\cos A \cos B} = 1$ है, तो x का मान क्या होगा?

[A] B

[B] A

[C] $A+B$

[D] $A-B$

$$\begin{aligned} \cos x &= \cos A \cos B - \sin A \sin B \\ &= \cos(A+B) \end{aligned}$$



30. Simplify the following $\sin 2x + 2\sin 4x + \sin 6x$?
निम्नलिखित $\sin 2x + 2\sin 4x + \sin 6x$ को सरल करें?

✓ [A] $4\cos^2 x \sin 4x$

[B] $4\cos^2 x \sin x$

[C] $2\cos^2 x \sin 4x$

[D] $4\cos^2 x \sin x$

$$= 2\sin 4x \cdot 2\cos^2 x + 2\sin 4x$$

$$= 2\sin 4x (2\cos^2 x + 1)$$

$$= 2\sin 4x \cdot 2\cos^2 x$$



31.

$$\frac{\sin A + \sin 3A + \sin 5A + \sin 7A}{\cos A + \cos 3A + \cos 5A + \cos 7A} = ?$$

[A] $\tan 2A$

[B] $\tan 8A$

[C] ~~$\cot 4A$~~

[D] $\tan 4A$

$$= \frac{2\sin 4A \cdot \cos 3A + 2\sin 4A \cdot \cos A}{2\cos 4A \cdot \cos 3A + 2\cos 4A \cdot \cos A}$$

$$= \frac{2\sin 4A \cdot (\cos 3A + \cos A)}{2\cos 4A \cdot (\cos 3A + \cos A)}$$



32. **Simplify/निम्न का मान ज्ञात कीजिए।**

$$\frac{2\sin 8\theta \cos \theta - 2\sin 6\theta \cos 3\theta}{2\cos 2\theta \cos \theta - 2\sin 3\theta \sin 4\theta}$$

[A] $\cot \theta$

[B] $\tan \theta$

[C] $\tan 2\theta$

[D] $\cot 2\theta$

$$= \frac{\cancel{\sin 90} + \sin 70 - (\cancel{\sin 90} + \sin 30)}{\cos 30 + \cancel{\cos 0} - (\cancel{\cos 0} - \cos 70)}$$

$$= \frac{\sin 70 - \sin 30}{\cos 30 + \cos 70} = \frac{2\cancel{\cos 50} \cdot \sin 20}{2\cancel{\cos 50} \cdot \cos 20} = \tan 20$$



33.

$$\frac{(\sin 4x + \sin 4y) \tan(2x - 2y)}{\sin 4x - \sin 4y} = ?$$

(2017)

[A] $\tan 2(2x + 2y)$

[B] $\tan 2x$

[C] $\cot(x - y)$

[D] $\tan(2x + 2y)$

$$\frac{2 \sin(x+y) \cdot \cos(x-y) \cdot \tan(x-y)}{2 \sin(x+y) \cdot \sin(x-y)} = \tan(x-y)$$



34.

$$\frac{\sin(x+y) - 2\sin x + \sin(x-y)}{\cos(x-y) + \cos(x+y) - 2\cos x} \times \frac{\sin 10x - \sin 8x}{\cos 10x + \cos 8x} = ?$$

[A] 0

[c] 1

~~[B]~~ $\tan^2 x$

[D] $2 \tan x$

$$\frac{\sin x - x \cos x}{x^2 - \cos x} \times \frac{\sin x \cdot x - \cos x \cdot x^2}{\sin x \cdot x^2 - \cos x \cdot x}$$

~~tonæ~~ X ~~tonæ~~



35.

$$\frac{\tan 5\theta + \tan 3\theta}{4 \cos 4\theta (\tan 5\theta - \tan 3\theta)} = ?$$

[A] $\sin 2\theta$

[C] $\tan 4\theta$

[B] $\cos 2\theta$

[D] $\cot 2\theta$

(V.V.Virup)

put $\theta = 6^\circ$

$$\frac{1}{4 \cos 4\theta} \times \frac{\frac{\sin 5\theta}{\cos 5\theta} + \frac{\sin 3\theta}{\cos 3\theta}}{\frac{\sin 5\theta}{\cos 5\theta} - \frac{\sin 3\theta}{\cos 3\theta}}$$

$$= \frac{1}{4 \cos 4\theta} \times \frac{\sin 8\theta}{\sin 2\theta} = \frac{\cancel{\sin 4\theta} \cdot \cancel{\cos 4\theta}}{4 \cancel{\cos 4\theta} \cdot \cancel{\sin 4\theta}} = \cos 2\theta$$



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

[A] $\sin 2\theta \sin 4\theta$

[B] $\cos 2\theta \cos 6\theta$

[C] $\sin 2\theta \sin 6\theta$

[D] $\cos 2\theta \cos 4\theta$

$$\frac{1}{2} \left[2 \sin \frac{\theta}{2} \cdot \sin \frac{9\theta}{2} + 2 \cos \frac{3\theta}{2} \cdot \cos \frac{13\theta}{2} \right]$$

$$= \frac{1}{2} \left[\cancel{\cos 4\theta} - \cancel{\cos 5\theta} + \cos 8\theta + \cancel{\cos 5\theta} \right]$$

$$= \frac{1}{2} \left[\underset{C}{\cos 4\theta} + \underset{D}{\cos 8\theta} \right] = \frac{1}{2} \times 2 \cos 6\theta \cdot \cos 2\theta$$



37. Using trigonometric formulas, find the value of $\left(\frac{\sin(x-y)}{\sin(x+y)}\right)\left(\frac{\tan x + \tan y}{\tan x - \tan y}\right)$?
त्रिकोणमितीय सूत्रों का उपयोग करके, $\frac{\sin(x-y)}{\sin(x+y)}\left(\frac{\tan x + \tan y}{\tan x - \tan y}\right)$ का मान ज्ञात कीजिए?

[A] -2

[C] 0

[B] 2

[D] 1 ✓

$|x| = 1$

Let $y = 0^\circ$

