

TRIGONOMETRY

$$\begin{aligned}
 \textcircled{Q} \quad & \cos 570^\circ \sin 510^\circ + \sin (-330^\circ) (\cos 390^\circ) = ? \\
 & \cos (360 + 210) \sin (360 + 150) - \sin (360 - 30) \cos (360 + 30) \\
 & \cos 210^\circ \sin 150^\circ + \sin 30^\circ \cos 30^\circ \\
 & \cos (180 + 30^\circ) \sin (180 - 30) \quad \frac{1}{2} \quad = \frac{\sqrt{3}}{2} \\
 & -\cos 30^\circ \sin 30^\circ \\
 & = -\frac{\sqrt{3}}{2} \times \frac{1}{2} + \frac{1}{2} \times \frac{\sqrt{3}}{2} \\
 & \quad \quad \quad 0
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{Q} \quad & \operatorname{cosec} 2910^\circ + \sec 4260^\circ + \tan 2565^\circ + \cot 1755^\circ = ? \\
 & \operatorname{cosec} (360 \times 8 + 30) + \sec (360 \times 12 - 60) + \tan (360 \times 7 + 45) + \\
 & \quad \quad \quad \cot (360 \times 5 - 45) \\
 & \operatorname{cosec} 30^\circ + \sec 60^\circ + \tan 45^\circ - \cot 45^\circ \\
 & \quad \quad \quad 2 + 2 + 1 - 1 \\
 & \quad \quad \quad 4
 \end{aligned}$$

$$\textcircled{Q} \quad \text{Find the value of } \cos 0^\circ + \cos 30^\circ - \tan 45^\circ + \operatorname{cosec} 60^\circ + \cot 90^\circ$$

$\cos 0^\circ + \cos 30^\circ - \tan 45^\circ + \operatorname{cosec} 60^\circ + \cot 90^\circ$ का मान ज्ञात कीजिए।

$$1 + \frac{\sqrt{3}}{2} - 1 + \frac{2}{\sqrt{3}} + 0$$

$$\frac{\cos 90^\circ}{\sin 90^\circ} = \frac{0}{1} = 0$$

$$\frac{3 + \frac{4}{\sqrt{3}}}{2\sqrt{3}} = \frac{7}{2\sqrt{3}}$$

$$\textcircled{Q} \quad \text{The value of } \frac{\cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$$

$$\frac{\cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ} \text{ का मान है } 1$$

$$\frac{\left(\frac{1}{2}\right)^2 + 4 \times \left(\frac{2}{\sqrt{3}}\right)^2 - 1}{1}$$

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

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

$$\frac{1}{4} + \frac{16}{3} - 1$$

$$\frac{67}{12} - 1$$

$$\frac{55}{12}$$

Q) If $A = \frac{\sin 45^\circ - \sin 30^\circ}{\cos 45^\circ + \cos 60^\circ}$ and $B = \frac{\sec 45^\circ - \tan 45^\circ}{\operatorname{cosec} 45^\circ + \cot 45^\circ}$, then which one of the following is correct?

यदि $A = \frac{\sin 45^\circ - \sin 30^\circ}{\cos 45^\circ + \cos 60^\circ}$ और $B = \frac{\sec 45^\circ - \tan 45^\circ}{\operatorname{cosec} 45^\circ + \cot 45^\circ}$ तो निम्नलिखित में से कौन सा सही है?

$$A = \frac{\sin 45^\circ - \sin 30^\circ}{\cos 45^\circ + \cos 60^\circ}$$

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

$$\frac{2 - \sqrt{2}}{2 + \sqrt{2}} \times \frac{2 - \sqrt{2}}{2 - \sqrt{2}}$$

$$\frac{(2 - \sqrt{2})^2}{4 - 2} = \frac{4 + 2 - 4\sqrt{2}}{2}$$

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

$$3 - 2\sqrt{2} \rightarrow \textcircled{A}$$

$$A = B$$

$$B = \frac{\sec 45^\circ - \tan 45^\circ}{\operatorname{cosec} 45^\circ + \cot 45^\circ}$$

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

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

$$3 - 2\sqrt{2} \rightarrow \textcircled{B}$$

Q) Value of the expression

$$\frac{1+2 \sin 60^\circ \cos 60^\circ}{\sin 60^\circ + \cos 60^\circ} + \frac{1-2 \sin 60^\circ \cos 60^\circ}{\sin 60^\circ - \cos 60^\circ} \text{ is}$$

$$\frac{1+2 \sin 60^\circ \cos 60^\circ}{\sin 60^\circ + \cos 60^\circ} + \frac{1-2 \sin 60^\circ \cos 60^\circ}{\sin 60^\circ - \cos 60^\circ} \text{ व्यंजक का मान है।}$$

$$\frac{\sin^2 60^\circ + \cos^2 60^\circ + 2 \sin 60^\circ \cos 60^\circ}{\sin 60^\circ + \cos 60^\circ} + \frac{\sin^2 60^\circ + \cos^2 60^\circ - 2 \sin 60^\circ \cos 60^\circ}{\sin 60^\circ - \cos 60^\circ}$$

$$\frac{(\sin 60^\circ + \cos 60^\circ)^2}{\cancel{(\sin 60^\circ + \cos 60^\circ)}} + \frac{(\sin 60^\circ - \cos 60^\circ)^2}{\cancel{(\sin 60^\circ - \cos 60^\circ)}}$$

$$\cancel{\sin 60^\circ + \cos 60^\circ} + \cancel{\sin 60^\circ - \cos 60^\circ}$$

$$2 \sin 60^\circ$$

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

$$\sqrt{3}$$

Q) The value of $\frac{4 \tan^2 30^\circ + \frac{1}{4} \sin^2 90^\circ + \frac{1}{8} \cot^2 60^\circ + \sin^2 30^\circ \cos^2 45^\circ}{\sin 60^\circ \cos 30^\circ - \cos 60^\circ \sin 30^\circ}$ is

$$\frac{4 \tan^2 30^\circ + \frac{1}{4} \sin^2 90^\circ + \frac{1}{8} \cot^2 60^\circ + \sin^2 30^\circ \cos^2 45^\circ}{\sin 60^\circ \cos 30^\circ - \cos 60^\circ \sin 30^\circ} \text{ का मान है :}$$

$$\frac{4 \times \left(\frac{1}{\sqrt{3}}\right)^2 + \frac{1}{4} \times 1 + \frac{1}{8} \times \left(\frac{1}{\sqrt{3}}\right)^2 + \frac{1}{4} \times \frac{1}{2}}{\frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} - \frac{1}{2} \times \frac{1}{2}}$$

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

$$\frac{4 \times \frac{1}{3} + \frac{1}{4} + \frac{1}{8} \times \frac{1}{3} + \frac{1}{8}}{\frac{3}{4} - \frac{1}{4}}$$

$$\frac{\frac{4}{3} + \frac{1}{4} + \frac{1}{24} + \frac{1}{8}}{\left(\frac{1}{2}\right)}$$

$$\frac{\frac{4}{3} + \frac{1}{4} + \frac{1}{24} + \frac{1}{8}}{\left(\frac{1}{2}\right)}$$

$$\left(\frac{11}{2}\right)$$

$$\frac{(32+6+1+3) \times 2}{24_{12}}$$

$$\frac{\cancel{42}}{\cancel{12}} \frac{7}{2} = 3\frac{1}{2}$$

Q) The value of $\frac{\operatorname{cosec}^2 30^\circ \sin^2 45^\circ + \sec^2 60^\circ}{\tan 60^\circ \operatorname{cosec}^2 45^\circ - \sec^2 60^\circ \tan 45^\circ}$ is

$$\frac{\operatorname{cosec}^2 30^\circ \sin^2 45^\circ + \sec^2 60^\circ}{\tan 60^\circ \operatorname{cosec}^2 45^\circ - \sec^2 60^\circ \tan 45^\circ} \text{ का मान ज्ञात कीजिए।}$$

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

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

$$\frac{6}{2\sqrt{3}-4} \Rightarrow \frac{\cancel{6}^3}{\cancel{2}(\sqrt{3}-2)}$$

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

$$\frac{3(\sqrt{3}+2)}{3-4}$$

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

Q) If $\tan(A+B) = \sqrt{3}$ & $\tan(A-B) = \frac{1}{\sqrt{3}}$, $0^\circ < (A+B) < 90^\circ$,

$A > B$, then the values of A and B are.... respectively.

यदि $\tan(A+B) = \sqrt{3}$ & $\tan(A-B) = \frac{1}{\sqrt{3}}$, $0^\circ < (A+B) < 90^\circ$, $A > B$,
तो A और B के मान क्रमशः _____ हैं।

$$A+B = 60^\circ, \quad A-B = 30^\circ$$

$$A = \frac{\cancel{90}}{\cancel{2}}$$

$$B = \frac{\cancel{30}}{2}$$

$$45^\circ \text{ \& \& } 15^\circ$$

Q) If $\tan \theta_1 = 1$, $\sin \theta_2 = \frac{1}{\sqrt{2}}$ then the value of $\sin(\theta_1 + \theta_2)$ equal to:

यदि $\tan \theta_1 = 1$, $\sin \theta_2 = \frac{1}{\sqrt{2}}$ तो $\sin(\theta_1 + \theta_2)$ का मान किसके बराबर है?

$$\theta_1 = 45^\circ, \theta_2 = 45^\circ$$

$$\sin(45^\circ + 45^\circ)$$

$$\sin 90^\circ = 1$$

RADIAN रेडियन

$a^\circ = a \text{ Degree}$

$a^c = a \text{ radian}$

$$\boxed{1^\circ = 57.296^c}$$

$$\pi = 3.14^\circ = 3.14 \times 57.296^c$$

$$= 179.9 \approx 180^\circ$$

$$\boxed{\pi = 180^\circ}$$

$$\boxed{360^\circ = 2\pi}$$

$$180^\circ = \pi$$

$$1^\circ = \frac{\pi^c}{180}$$

$$\boxed{n^\circ = \left(\frac{\pi}{180} \times n \right)^c}$$

$$90^\circ \rightarrow \frac{\pi}{2 \times 180} \times 90 = \frac{\pi}{2}$$

$$45^\circ \rightarrow \frac{\pi}{4 \times 180} \times 45 = \frac{\pi}{4}$$

$$30^\circ = \frac{\pi}{6 \times 180} \times 30 = \frac{\pi}{6}$$

$$60^\circ = \frac{\pi}{3 \times 180} \times 60 = \frac{\pi}{3}$$

Q) $\frac{4}{3} \cot^2 \left(\frac{\pi}{6} \right)^{30^\circ} + 3 \cos^2 150^\circ - 4 \operatorname{cosec}^2 45^\circ + 8 \sin \frac{\pi}{2}$

$\frac{4}{3} \times (\sqrt{3})^2 + 3 \cos^2 (180-30) - 4 \times (\sqrt{2})^2 + 8 \times 1$

$\frac{4}{3} \times 3 + 3 \times \cos^2 30^\circ - 4 \times 2 + 8$

$4 + 3 \times \frac{3}{4} - 8 + 8$

$4 + \frac{9}{4} = \frac{25}{4}$

Q) The value of $32 \cot^2 \frac{\pi}{4} - 8 \sec^2 \frac{\pi}{3} + 8 \cos^3 \frac{\pi}{6}$ is equal to:

$32 \cot^2 \left(\frac{\pi}{4} \right)^{45} - 8 \sec^2 \left(\frac{\pi}{3} \right)^{60} + 8 \cos^3 \left(\frac{\pi}{6} \right)^{30}$ का मान बराबर है।

$32 \times 1 - 8 \times (2)^2 + 8 \times \left(\frac{\sqrt{3}}{2} \right)^3$

$32 - 32 + 8 \times \frac{3\sqrt{3}}{8}$

$3\sqrt{3}$

Q) If $A = \frac{\pi}{6}$ and $B = \frac{\pi}{3}$ then which of the following is/are correct?

यदि $A = \frac{\pi}{6}^{30^\circ}$ और $B = \frac{\pi}{3}^{60^\circ}$, तो निम्नलिखित में से कौनसा/से सही है/हैं?

I. $\sin A + \sin B = \cos A + \cos B \Rightarrow \sin 30^\circ + \sin 60^\circ = \cos 30^\circ + \cos 60^\circ$

II. $\tan A + \tan B = \cot A + \cot B \Rightarrow \tan 30^\circ + \tan 60^\circ = \cot 30^\circ + \cot 60^\circ$

Both 1 and 2

Q) If $\cos \theta \geq \frac{1}{2}$ in the first quadrant then which one of the following is correct?

यदि पहले चतुर्थांश में $\cos \theta \geq \frac{1}{2}$ हो, तो निम्नलिखित में से कौन सा सही है?

$90^\circ < \theta < 0^\circ$

↳ Ist Quadrant

$$\cos \theta \geq \frac{1}{2}$$

$$\theta \geq 60^\circ$$

$$\theta \geq \frac{\pi}{3}$$

Q) Consider the following :

(i) $\sin 1^\circ > \sin 1^\circ$ (ii) $\cos 1^\circ < \cos 1^\circ$ (iii) $\tan 1^\circ > \tan 1^\circ$

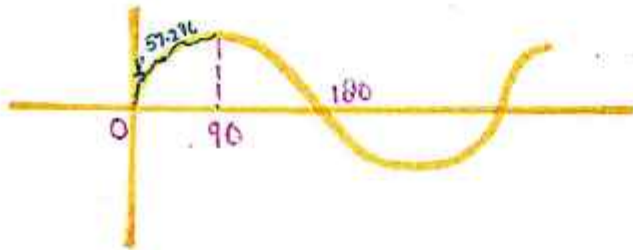
Which of the above are not correct?

निम्नलिखित पर विचार कीजिये:

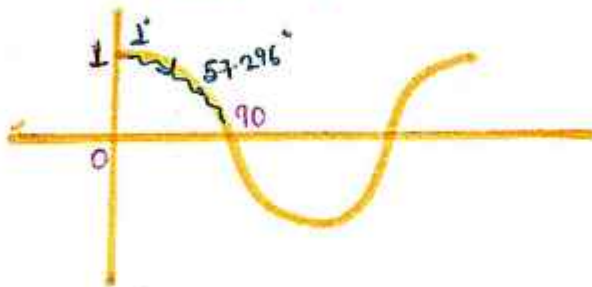
(i) $\sin 1^\circ > \sin 1^\circ$ (ii) $\cos 1^\circ < \cos 1^\circ$ (iii) $\tan 1^\circ > \tan 1^\circ$

उपरोक्त में से कौन सा सही नहीं है।

(i) $\sin 1^\circ > \sin 1^\circ$ $1^\circ = 57.296^\circ$



(ii) $\cos 1^\circ < \cos 1^\circ$ $1^\circ = 57.296^\circ$



(iii) $\tan 1^\circ > \tan 1^\circ$ $1^\circ = 57.296^\circ$



I, II and III

Q) Consider the following statements:

निम्नलिखित कथनों पर विचार करें:

1) The first quadrant contains only one value of x which satisfies $\sin x + \cos x = 2$.

प्रथम चतुर्थांश में x का केवल वही मान है जो $\sin x + \cos x = 2$ को संतुष्ट करता है।

$$0^\circ < \theta < 90^\circ$$

$$\sin x + \cos x = 2$$

2) The first quadrant contains only one value of x which satisfies $\sin x - \cos x = 0$

प्रथम चतुर्थांश में x का केवल एक मान है जो $\sin x - \cos x = 0$ को संतुष्ट करता है।

$$\sin x - \cos x = 0$$

$$\sin x = \cos x$$

$$x = 45^\circ \Rightarrow \sin x = \cos x$$

उपरोक्त में से कौन-सा/से सही है/हैं?

Which of the above is /are correct?

2 only

1. If $x \sin 45^\circ = y \operatorname{cosec} 30^\circ$, then $\frac{x^2}{y^2}$ is equal to

यदि $x \sin 45^\circ = y \operatorname{cosec} 30^\circ$, तो $\frac{x^2}{y^2}$ बराबर है

- (a) 4^3
- (b) 6^3
- (c) 2^3
- (d) 8^3

2. If $x \cos^2 30^\circ \cdot \sin 60^\circ = \frac{\tan^2 45^\circ \cdot \sec 60^\circ}{\operatorname{cosec} 60^\circ}$ then the value of x.

यदि $x \cos^2 30^\circ \cdot \sin 60^\circ = \frac{\tan^2 45^\circ \cdot \sec 60^\circ}{\operatorname{cosec} 60^\circ}$ तो x का मान।

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

3. Find the value of $\operatorname{cosec}(-1410^\circ)$

$\operatorname{cosec}(-1410^\circ)$ का मान ज्ञात कीजिए

- (a) 3
- (b) 4
- (c) 7
- (d) 2

4. $2\cos^2 135^\circ + \sin 150^\circ + \frac{1}{2}\cos 180^\circ + \tan 135^\circ$

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

5. Find the value of $\sin^2 200^\circ + \sin^2 250^\circ + \sin^2 280^\circ + \sin^2 370^\circ$

$\sin^2 200^\circ + \sin^2 250^\circ + \sin^2 280^\circ + \sin^2 370^\circ$ का मान ज्ञात कीजिए

- (a) 2
- (b) 3
- (c) 4
- (d) 6

6. $\sin^2 \frac{\pi}{6} + \cos^2 \frac{\pi}{3} - \tan^2 \frac{\pi}{4}$

- (a) $\frac{-1}{2}$
- (b) 2
- (c) -2
- (d) $\frac{1}{2}$

7. $2\sin^2 \frac{3\pi}{4} + 2\cos^2 \frac{\pi}{4} + 2\sec^2 \frac{\pi}{3}$

- (a) 8
(b) 10
(c) 6
(d) 0

8. $2\sin^2 \frac{\pi}{6} - \operatorname{cosec}^2 \frac{7\pi}{6} \cos^2 \frac{\pi}{3}$

- (a) $-\frac{1}{2}$
(b) $\frac{7}{2}$
(c) $\frac{5}{2}$
(d) $\frac{3}{2}$

9. $\frac{5\sin^2 30^\circ + \cos^2 45^\circ - 4\tan^2 30^\circ}{2\sin 30^\circ \cdot \cos 30^\circ + \tan 45^\circ} = ?$

- (a) $\frac{5}{6(\sqrt{3}+2)}$
(b) $5 - \sqrt{3}$
(c) $\sqrt{3} - 2$
(d) $\frac{\sqrt{3}-2}{6}$

10. If $\cot \theta = \frac{1}{2}$ & θ is acute angle, the value of $\frac{8\sin \theta + 5\cos \theta}{\sin^3 \theta + 2\cos^3 \theta + 3\cos \theta}$ is यदि $\cot \theta = \frac{1}{2}$ और θ न्यूनकोण है, तो $\frac{8\sin \theta + 5\cos \theta}{\sin^3 \theta + 2\cos^3 \theta + 3\cos \theta}$ का मान है

- (a) $\frac{23}{5}$
(b) $\frac{21}{5}$
(c) $\frac{21}{5\sqrt{5}}$
(d) $\frac{23\sqrt{5}}{5}$

ANSWER SHEET

1	2	3	4	5	6	7	8	9	10
C	B	D	A	A	A	B	A	A	B

Worksheet solution

Sol 1

$$x \sin 45^\circ = y \operatorname{cosec} 30^\circ$$

$$x \times \frac{1}{\sqrt{2}} = y \times 2$$

$$x = 2\sqrt{2}y$$

$$\frac{x}{y} = \frac{2\sqrt{2}}{1}$$

$$\frac{x^2}{y^2} = \frac{8}{1} = 2^3$$

Sol 2

$$x \cos^2 30^\circ \cdot \sin 60^\circ = \frac{\tan^2 45^\circ \sec 60^\circ}{\operatorname{cosec} 60^\circ}$$

$$x \times \left(\frac{\sqrt{3}}{2}\right)^2 \times \frac{\sqrt{3}}{2} =$$

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

$$x \times \frac{3}{4} \times \frac{\sqrt{3}}{2} = 1 \times \sqrt{3}$$

$$x = \frac{8}{3} = 2\frac{2}{3}$$

Sol 3

$$\operatorname{cosec}(-141^\circ)$$

$$= \operatorname{cosec}[4 \times 360^\circ - 30^\circ]$$

$$= \operatorname{cosec}[-30^\circ]$$

$$\operatorname{cosec} 30^\circ = 2 \checkmark$$

Sol 4

$$2 \cos^2 135^\circ + \sin 150^\circ +$$

$$\frac{1}{2} \cos 180^\circ + \tan 135^\circ$$

$$2 \left[\cos^2 (90^\circ + 45^\circ) + \sin (90^\circ + 60^\circ) + \frac{1}{2} \cos 180^\circ + \tan (90^\circ + 45^\circ) \right]$$

$$2 \left(-\frac{1}{\sqrt{2}} \right)^2 + \frac{1}{2} + \frac{1}{2}(-1) + (-1) = 0$$

Sol 5

$$\sin^2 200^\circ + \sin^2 250^\circ + \sin^2 280^\circ + \sin^2 370^\circ$$

$$\sin^2 (180^\circ + 20^\circ) + \sin^2 (270^\circ - 20^\circ) + \sin^2 (270^\circ + 10^\circ) + \sin^2 (360^\circ + 10^\circ)$$

$$\sin^2 20^\circ + \cos^2 20^\circ + \cos^2 10^\circ + \sin^2 10^\circ$$

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

Sol-6

$$\sin^2 \frac{\pi}{6} + \cos^2 \frac{\pi}{3} + \tan^2 \frac{\pi}{4}$$

$$\sin^2 30^\circ + \cos^2 60^\circ + \tan^2 45^\circ$$

$$\left(\frac{1}{2}\right)^2 + \left(\frac{1}{2}\right)^2 + (1)^2$$

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

Sol-7

$$2 \sin^2 \frac{3\pi}{4} + 2 \cos^2 \frac{\pi}{4} + 2 \sec^2 \frac{\pi}{3}$$

$$2 \sin^2 135^\circ + 2 \cos^2 45^\circ + 2 \sec^2 60^\circ$$

$$2 \sin^2 45^\circ + 2 \cos^2 45^\circ + 2 \sec^2 60^\circ$$

$$2 \times \left(\frac{1}{\sqrt{2}}\right)^2 + 2 \times \left(\frac{1}{\sqrt{2}}\right)^2 + 2 \times (2)^2$$

$$= 10$$

Sol-8

$$2 \sin^2 \frac{\pi}{6} - \operatorname{cosec}^2 \frac{7\pi}{6} \cdot \cos^2 \frac{\pi}{3}$$

$$2 \sin^2 30^\circ - \operatorname{cosec}^2 210^\circ \times \cos^2 60^\circ$$

$$2 \sin^2 30^\circ - (-\operatorname{cosec}^2 30^\circ) \times \cos^2 60^\circ$$

$$2 \left(\frac{1}{2}\right)^2 - (-2)^2 \times \left(\frac{1}{2}\right)^2$$

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

Sol-9

$$5 \sin^2 30^\circ + \cos^2 45^\circ - 4 \tan^2 30^\circ$$

$$2 \sin 30^\circ \cdot \cos 30^\circ + 4 \tan 45^\circ$$

$$5 \left(\frac{1}{2}\right)^2 + \left(\frac{1}{\sqrt{2}}\right)^2 - 4 \left(\frac{1}{\sqrt{3}}\right)^2$$

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

$$\frac{5}{4} + \frac{1}{2} - \frac{4}{3}$$

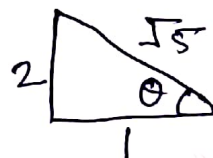
$$= \frac{\sqrt{3} + 2}{2}$$

$$\frac{15 + 6 - 16}{12}$$

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

$$= \frac{5}{6(\sqrt{3} + 2)}$$

$$\cot \theta = \frac{1}{2}$$



$$\frac{8 \sin \theta + 5 \cos \theta}{\sin^3 \theta + 2 \cos^3 \theta + 3 \cos \theta}$$

$$= \frac{8 \times \frac{2}{\sqrt{5}} + 5 \times \frac{1}{\sqrt{5}}}{\frac{8}{5\sqrt{5}} + \frac{2 \times 1}{5\sqrt{5}} + \frac{3}{\sqrt{5}}} = \frac{21}{5}$$