

1) Find the value of  $\sin 30^\circ \times \cos^2 45^\circ + \tan^3 45^\circ$

$$\rightarrow \sin 30^\circ \times \cos^2 45^\circ + \tan^3 45^\circ$$

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

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

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

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

$$= \frac{5}{4} \text{ Ans:—}$$



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2) If  $x \tan 45^\circ \times \sin 30^\circ = \cos 30^\circ \times \tan 30^\circ$ , then find the value of  $x$ ?

$$\rightarrow x \tan 45^\circ \times \sin 30^\circ = \cos 30^\circ \times \tan 30^\circ$$

$$\text{or, } x \times 1 \times \frac{1}{2} = \frac{\sqrt{3}}{2} \times \frac{1}{\sqrt{3}}$$

$$\text{or, } \frac{x}{2} = \frac{1}{2}$$

$$\text{or, } x = \frac{1}{2} \times 2$$

$$\text{or, } x = 1 \text{ Ans:—}$$

3) If  $y \sin 45^\circ \times \cos 45^\circ = \tan^2 45^\circ - \cos^2 30^\circ$ , then find the value of  $y$ ?

$$\rightarrow y \sin 45^\circ \times \cos 45^\circ = \tan^2 45^\circ - \cos^2 30^\circ$$

$$\text{or, } y \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = (1)^2 - \left(\frac{\sqrt{3}}{2}\right)^2$$

$$\text{or, } \frac{y}{2} = 1 - \frac{3}{4}$$

$$\text{or, } \frac{y}{2} = \frac{4-3}{4}$$

$$\text{or, } \frac{y}{2} = \frac{1}{4} \quad \text{or, } y = \frac{1}{2} \text{ Ans}$$

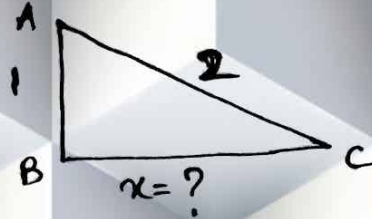
4)  $\sin \theta = 0.5$ , then find the value of  $\tan \theta = ?$

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$$\sin \theta = 0.5$$

$$\text{or, } \sin \theta = \frac{1}{2} = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\therefore \tan \theta = \frac{\text{opposite}}{\text{adjacent}} = \frac{1}{\sqrt{3}} \quad \underline{\text{Ansr}}$$



We know,  $\text{hypotenuse}^2 = \text{opposite}^2 + \text{adjacent}^2$

$$\text{or, } \text{adjacent}^2 = \text{hypotenuse}^2 - \text{opposite}^2$$

$$\text{or, } \text{adjacent} = \sqrt{\text{hypotenuse}^2 - \text{opposite}^2}$$

$$\text{or, } \text{adjacent} = \sqrt{(2)^2 - (1)^2}$$

$$\text{or, } \text{adjacent} = \sqrt{4 - 1}$$

$$\text{or, } \text{adjacent} = \sqrt{3}$$

5) If  $\cos \theta = \frac{4}{5}$ , then find the value of  $\sin \theta$  &  $\cot \theta = ?$

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$$\cos \theta = \frac{4}{5} = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\therefore \sin \theta = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{3}{5} \quad \underline{\text{Ansr}}$$

$$\therefore \cot \theta = \frac{1}{\tan \theta} = \frac{\cos \theta}{\sin \theta}$$

$$\text{or, } \cot \theta = \frac{4/5}{3/5}$$

$$\text{or, } \cot \theta = \frac{4}{5} \times \frac{5}{3}$$

$$\text{or, } \cot \theta = \frac{4}{3} \quad \underline{\text{Ansr}}$$

We know,

$$\text{opposite} = \sqrt{\text{hypotenuse}^2 - \text{adjacent}^2}$$

$$\text{or, } \text{opposite} = \sqrt{(5)^2 - (4)^2}$$

$$\text{or, } \text{opposite} = \sqrt{25 - 16}$$

$$\text{or, } \text{opposite} = \sqrt{9}$$

$$\text{or, } \text{opposite} = 3$$





$$6) \tan^2 \theta \div \cot \theta = ?$$

$$\rightarrow \tan^2 \theta \div \cot \theta$$

$$= \tan^2 \theta \div \frac{1}{\tan \theta}$$

$$= \tan^2 \theta \times \tan \theta$$

$$= \tan^3 \theta \text{ Ans}$$

$$7) \sin \theta \times \operatorname{cosec} \theta = ?$$

$$\rightarrow \sin \theta \times \operatorname{cosec} \theta$$

$$= \sin \theta \times \frac{1}{\sin \theta}$$

$$= 1 \text{ Ans}$$

$$8) \text{ Find the value of } \cos^2 \theta - \sin^2 \theta - 2 \cos^2 \theta = ?$$

$$\rightarrow \cos^2 \theta - \sin^2 \theta - 2 \cos^2 \theta$$

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

$$= -(\cos^2 \theta + \sin^2 \theta) \quad [ \because \sin^2 \theta + \cos^2 \theta = 1 ]$$

$$= -1 \text{ Ans}$$