

Q.1 Max. value of $\cos^2 \theta$ is $\frac{a^2+b^2}{2ab}$ if: — ($a=b$, $a=\frac{b}{2}$, $a < b$, $a > b$)

Q.2: If $\sec \theta = \frac{1}{2}$, then $\csc \theta (\cos \theta - \sec \theta) =$ — ($\frac{3}{4}$, $-\frac{3}{4}$, $\frac{\sqrt{3}}{2}$, $-\frac{\sqrt{3}}{2}$)

Q.3: If $\sin 2\theta = 1$, then $\theta =$ — (30° , 60° , 45° , 90°) $\frac{a^2+b^2}{(a+b)^2} = \frac{a^2+b^2+2ab}{(a+b)^2}$

Q.4: ABC is right isos. Δ , right angled at C, then $\csc^2 A - \tan^2 B =$ — (1 , -1 , 2 , -2)

Q.5: Length of shadow of a tower on ground is 53 times the height of tower. Then $\angle$ of elevation of Sun is — (45° , 30° , 60° , 90°)

Q.6: A ladder 10m in length touches a wall at height of 5m. The angle made by ladder with the horizontal is: — (30° , 45° , 90° , 60°)

Q.7: If $\sin \alpha = \frac{1}{2}$, $\cos \beta = \frac{1}{2}$, then find the value of $\alpha + \beta$. (OR)

If $4x = \csc \theta$ and $\frac{4}{x} = \cot \theta$, find value of $4(x^2 - \frac{1}{x^2})$

Q.8: In ΔABC , right angled at B, if $\tan A = 1$, verify that $2 \sin A \cos A = 1$ (3)

Q.9: Evaluate: $853 \csc^2 30^\circ \sin 60^\circ \cos 60^\circ \cos^2 45^\circ$ (OR)

find x : If $2 \csc^2 30^\circ + x \sin^2 60^\circ - \frac{3}{4} \tan^2 30^\circ = 10$ (OR) $(a+b)^2 - 2ab$

Evaluate: $\frac{\sin 30^\circ + \tan 45^\circ - \csc 60^\circ}{\sec 30^\circ + \cos 60^\circ + \cot 45^\circ}$. (3)

Q.10: Prove: $\frac{\cos A - \sin A + 1}{\cos A + \sin A - 1} = \csc A + \cot A$ (OR)

Prove that: $\frac{\tan \theta}{\sec \theta - 1} + \frac{\tan \theta}{\sec \theta + 1} = 2 \csc \theta$ (OR)

Q.11: Prove that: $\frac{\tan \theta - \cot \theta}{\sin \theta \cos \theta} = \tan^2 \theta - \cot^2 \theta$ (OR)

If $\cos \theta + \cos^2 \theta = 1$, find $\sin^2 \theta + \sin^4 \theta$ (OR)

If $1 + \sin^2 \theta = 3 \sin \theta \cos \theta$, prove that $\tan \theta = 1$ or $\frac{1}{2}$. (OR)

If $\sin \theta + \csc \theta = p$ and $\sec \theta + \csc \theta = q$, show that $2(p^2 - 1) = 2p$ (3)

11 The angle of elevation of top of a tower from point on the ground, which is 30m away from the foot of tower is 30° . Find height of the tower. (3)

12 From a point on the ground, the angles of elevation of bottom & top of transmission tower fixed at top of a 20 high building are 45° & 60° respectively. Find the height of tower. (OR)

The angle of elevation of top of a building from the foot of tower is 30° and the angle of elevation of top of tower from foot of the building is 60° . If the tower is 50m high, then find the height of building. (5)

13 There is a flagstaff on a tower of height 20m. At a point on ground, the angles of elevation of foot and top of flag are 45° and 60° respectively. Find height of flag staff. (OR)

A man standing on deck of a ship, which is 10m above water level. He observes the angle of elevation of top of hill is 60° and the angle of depression of base of hill is 30° . Calculate the distance of hill from ship and height of hill. (5)

14 A vertical tower stands on horizontal plane and is surmounted by vertical flagstaff of height h . At a point on plane, the angles of elevation of the bottom & top of the flagstaff are α, β respectively. Prove that the height of tower is $\left(\frac{h \tan \alpha}{\tan \beta - \tan \alpha} \right)$. (OR) (5)

A man in a boat rowing away from a lighthouse 100m high takes 2 min to change angle of elevation of lighthouse from 60° to 45° . Find speed of boat. (OR)

Length of shadow of a tower standing on level ground is found to be $2x$ metre longer when Sun's altitude is 30° than when it was 45° . Prove that height of tower is $(\sqrt{3}+1)x$ metre.

