YugVanta

Class 10

6. Trigonometry

SET B (Intermediate Level | Maharashtra Board)

1. If tanA=3/4,find the value of:

$$\frac{\sin A + \cos A}{\sin A - \cos A}$$

2. If sinA=5/13and A is an acute angle, find:

tanA,cosA,cosecA

3. Prove that:

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

4. Simplify and find the value:

$\tan^2 30^\circ + \cot^2 60^\circ$

5. Prove the identity:

$\text{Sec}^2 A - \tan^2 A = 1$

6. Evaluate without using a calculator:

$$\frac{\sin 30^\circ + \sin 60^\circ}{\cos 30^\circ + \cos 60^\circ}$$

7. Simplify:

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

8. If secA=13/12, find tanA and sinA.

9. If cosecA=5/4, verify that:

$\text{Cosec}^2 A - \cot^2 A = 1$

10. Prove:

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

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11. The angle of elevation of the top of a tower from a point on the ground is 45°. If the tower is 20 m high, find the distance of the point from the foot of the tower.
12. A ladder 15 m long is leaning against a wall. The foot of the ladder is 9 m away from the wall. Find the angle of elevation of the ladder.
13. The angle of depression of a boat from the top of a 50 m high cliff is 30°. Find the distance of the boat from the base of the cliff.
14. From a point on the ground, the angle of elevation of the top of a pole is 60°. If the height of the pole is 10 m, find the distance of the point from the base of the pole.
15. A man standing on a 30 m high tower observes the angle of depression of a car on the road to be 45°. Find how far the car is from the base of the tower.
16. Two poles of equal height are standing opposite to each other on either side of a road 100 m wide. From a point between them on the road, the angles of elevation of their tops are 60° and 30°. Find the height of the poles and the distances of the point from each pole.
17. From the top of a hill, the angles of depression of two successive milestones on a straight level road are found to be 30° and 45°. Find the distance between the milestones, if the height of the hill is 200 m.
18. A man standing on the deck of a ship, 10 m above water level, observes the angle of elevation of the top of a lighthouse as 60° and the angle of depression of its base as 30°. Find the height of the lighthouse.
19. From a point 40 m away from the base of a building, the angle of elevation of the top of the building is 45°. Find the height of the building.
20. The top of a tower is observed from two points at distances 50 m and 80 m from its foot, the angles of elevation being complementary. Prove that the height of the tower is 40 m.