

1. If $x \cos 60^\circ + y \cos 30^\circ + \sin 30^\circ - \cot 45^\circ = 5$, then find the value of $x + y$ (cbse-2025)

2. Evaluate: $\frac{\tan^2 60^\circ}{\sin^2 60^\circ + \cos^2 30^\circ}$ (cbse-2025)

3. Prove that: $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \csc \theta$ (cbse-2025)

4. Prove that $\frac{\sin A + \cos A}{\sin A - \cos A} + \frac{\sin A - \cos A}{\sin A + \cos A} = \frac{2}{2\sin^2 A - 1}$ (cbse-2025)

5. If $\tan A = \sqrt{3}$; where A is an acute angle, then find the value of $\frac{\sin^2 A}{1 + \cos^2 A}$ (cbse-2025)

6. Prove that: $\left(1 + \frac{1}{\tan^2 \theta}\right) \left(1 + \frac{1}{\cot^2 \theta}\right) = \frac{1}{\sin^2 \theta - \sin^4 \theta}$ (cbse-2025)

7. Prove that: $\sqrt{\frac{\sec \theta - 1}{\sec \theta + 1}} + \sqrt{\frac{\sec \theta + 1}{\sec \theta - 1}} = 2 \sec \theta$ (cbse-2025)

8. Find the value of x for which $(\sin A + \csc A)^2 + (\cos A + \sec A)^2 = x + \tan^2 A + \cot^2 A$ (cbse-2025)

9. Evaluate the following $\frac{3\sin 30^\circ - 4\sin^3 30^\circ}{2\sin^2 50^\circ + 2\cos^2 50^\circ}$ (cbse-2025)

10. Prove that $\frac{\cos A + \sin A - 1}{\cos A - \sin A + 1} = \csc A - \cot A$ (cbse-2025)

11. If $\cot \theta + \cos \theta = p$ and $\cot \theta - \cos \theta = q$
Prove that $p^2 - q^2 = 4\sqrt{pq}$ (cbse-2025)

12. Prove that $\frac{1 + \csc A}{\csc A} = \frac{\cos^2 A}{1 - \sin A}$ (cbse-2025)

13. Let $2A + B$ and $A + 2B$ be acute angles such that $\sin(2A + B) = \frac{\sqrt{3}}{2}$ and $\tan(A + 2B) = 1$. Find the value of $\cot(4A - 7B)$ (cbse-2025)

14. It is given that $\sin(A-B) = \sin A \cos B - \cos A \sin B$. Use it to find the value of $\sin 15^\circ$ (cbse-2025)

15. Prove that: $\frac{\cos \theta - 2 \cos 3\theta}{\sin \theta - 2 \sin 3\theta} + \cot \theta = 0$ (cbse-2025)

16. Prove that if given $\sin \theta + \cos \theta = x$, prove that $\sin^4 \theta + \cos^4 \theta = \frac{2 - (x^2 - 1)^2}{2}$ (cbse-2025)

17. If $A = 60^\circ$ and $B = 30^\circ$, verify that: $\sin(A+B) = \sin A \cos B + \cos A \sin B$ (cbse-2024)

18. Prove that: $\frac{1 + \sec \theta - \tan \theta}{1 + \sec \theta + \tan \theta} = \frac{1 - \sin \theta}{\cos \theta}$ (cbse-2024)

19. Prove that: $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1} = \frac{1}{\sec \theta - \tan \theta}$ (cbse-2024)

20. Evaluate: $\frac{5 \cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \sin^2 60^\circ}$ (cbse-2024)