

1. Find the values of α from 0° to 720° for which $\cos \alpha = \frac{\sqrt{2}}{2}$
2. Find the values of α from 0° to 360° for which $\cos 5\alpha = \frac{\sqrt{3}}{2}$
3. Find the values of α from 0° to 720° for which $\sin \alpha = \frac{\sqrt{3}}{2}$
4. Find the values of α from 0° to 360° for which $\sin 3\alpha = \frac{\sqrt{2}}{2}$
5. Find the solutions of equation: $\sin \left(2x + \frac{\pi}{4} \right) = 1$
6. Find the solutions of equation: $\cos \left(3x - \frac{\pi}{3} \right) = \frac{1}{2}$
7. Find the solutions of equation: $\sin \left(2x + \frac{\pi}{3} \right) = \cos \left(2x + \frac{\pi}{3} \right)$
8. Find the solutions of equation: $\sin 7\alpha + \cos 3\alpha = 0$
9. Prove the following identities: $\frac{\sin A - \sin B}{\cos A + \cos B} = \tan \frac{A - B}{2}$
10. $\sin x + \sin 3x + \sin 5x + \sin 7x = 4 \sin 4x \cos 2x \cos x$
11. $\cos 3x - \cos 7x = 4 \sin 5x \sin x \cos x$
12. Solve the following equations:
 - $\sin 3x + \sin x = 0$
 - $\sin 5x - \sin x = \cos 3x$
 - $\cos 5x + \cos x = \sin 5x + \sin x$
 - $\cos 4x - \cos 2x + \sin 3x = 0$