

Trigonometric equations

1. $\cos x = -\frac{\sqrt{3}}{2}$
2. $\tan x = 1$
3. $2 - 5 \cos x = 6$
4. $4 \sin x + 1 = 0$

Prove that

1. $\tan^2 \alpha \cdot (1 - \sin^2 \alpha) = \sin^2 \alpha$
2. $\frac{\sin \alpha \cdot \cos \alpha}{\tan \alpha} = 1 - \sin^2 \alpha$
3. $(1 + \tan^2 \alpha) \cdot \cos^2 \alpha = 1$

Solve

1. $2 \sin x - 1 = 0$
2. $2 \sin 3x - 1 = 0$
 $\sin x + \sqrt{2} = -\sin x$
- 3.
4. $3 \tan^2 x - 1 = 0$
5. $\cot x \cos^2 x = 2 \cot x$
 $2 \sin^2 x - \sin x - 1 = 0$
6. $2 \sin^2 x + 3 \cos - 3 = 0$
- 7.
8. $2 \cos(3x - 1) = 0$
9. $3 \tan\left(\frac{x}{2}\right) + 3 = 0$
10. $\sec^2 x - 2 \tan x = 4$
11. $\frac{1 + \sin x}{\cos x} + \frac{\cos x}{1 + \sin x} = 4$