

Example 1

Find all solutions of the equation $\csc(x) + \cot(x) = 1$ in the interval $[0, 2\pi)$ algebraically.

Example 2

Solve the equation $\sin(2x) = -\frac{\sqrt{3}}{2}$ algebraically.

Example 3

Find all solutions of the equation $\cos\left(\frac{x}{2}\right) = \frac{\sqrt{2}}{2}$ in the interval $[0, 2\pi)$ algebraically.

Example 4

Find all solutions of the equation $\sec^2(x) + \tan(x) = 3$ in the interval $[0, 2\pi)$ algebraically.

Example 5

Find all solutions of the equation $3\tan^2(x) + 5\tan(x) - 4 = 0$ in the interval $[-\pi/2, \pi/2]$ graphically.

In Exercises 1-3, solve the equation algebraically.

1. $\sec(x) + \tan(x) = 1$

2. $2\sin^2(2x) = 1$

3. $\tan\left(\frac{x}{3}\right) = 1$

In Exercises 4-6, find all solutions of the equation in the interval $[0, 2\pi)$ algebraically.

4. $\cos(2x) = -1$

5. $\sec(4x) = 2$

In Exercises 7-8, find all solutions of the equation in the interval $[-\pi/2, \pi/2]$ graphically.

7. $4\cos^2(x) - 2\sin(x) + 1 = 0$

6. $\cos\left(\frac{x}{4}\right) = 0$

8. $2\sec^2(x) + \tan(x) - 6 = 0$