

7.5 Trigonometric Equations

Objectives: (1) Solve equations involving a single trig function, (2) find approximate solutions using a calculator, (3) solve equations in quadratic form, (4) solve equations using fundamental identities.

Example 1 Find all the solutions on the interval $0 \leq x < 2\pi$ for the equation $2 \cos(x) + 1 = 0$. Find the general expression for all the solutions.

Example 2 Find all the solutions for $2 \sin(3x) - \sqrt{2} = 0$ on the interval $0 \leq x < 2\pi$.

Example 3 Find all the solutions for $2 \cos(4x) - \sin(x) \cos(4x) = 0$

Example 4 Find all the solutions for $2 \cos^2(x) + \sin(x) = 1$

Example 5 Find all the solutions for $15 \cos^2(2x) - \cos(2x) - 2 = 0$ on the interval $0 \leq x < 2\pi$. Round to 4 decimal places.

Example 6 Find all the solutions to $2 \sin(2x) - \cos(x) = 0$.

Example 7 Use your calculator to find all the solution to $3 \sin(x) \cos(2x) = x + 2$. Round answers to four decimal places.