

# **Section 8.8**

## **Trigonometric Equations (II)**

# OBJECTIVE 1

- ✓ **Solve Trigonometric Equations Quadratic in Form**

## EXAMPLE

### Solving a Trigonometric Equation Quadratic in Form

Solve the equation:  $2 \cos^2 \theta - \cos \theta - 1 = 0$ ,  $0 \leq \theta < 2\pi$

# OBJECTIVE 2

- ✓ 2 Solve Trigonometric Equations Using Identities

## EXAMPLE

### Solving a Trigonometric Equation Using Identities

Solve the equation:  $\sin^2 \theta - \sin \theta = \cos^2 \theta$ ,  $0 \leq \theta < 2\pi$

## EXAMPLE

### Solving a Trigonometric Equation Using Identities

Solve the equation:  $\sin(2\theta) = \cos \theta$ ,  $0 \leq \theta < 2\pi$

## EXAMPLE

### Solving a Trigonometric Equation Using Identities

Solve the equation:  $\sin^2 \theta + \cos \theta = 3$ ,  $0 \leq \theta < 2\pi$

## EXAMPLE

### Solving a Trigonometric Equation Using Identities

Solve the equation:  $\cos^2 \theta - \sin^2 \theta = \frac{\sqrt{2}}{2}$ ,  $0 \leq \theta < 2\pi$



# OBJECTIVE 3

- 3 Solve Trigonometric Equations Linear in Sine and Cosine

## EXAMPLE

### Solving a Trigonometric Equation Linear in Sine and Cosine

Solve the equation:  $\sin \theta = \cos \theta + 1$ ,  $0 \leq \theta < 2\pi$

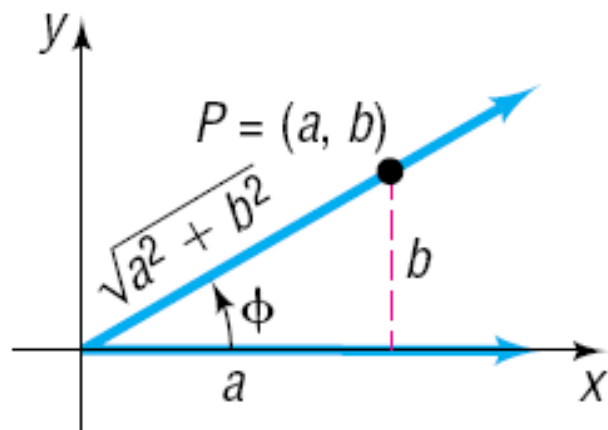
## EXAMPLE

### Solving a Trigonometric Equation Linear in $\sin \theta$ and $\cos \theta$

Solve:

$$a \sin \theta + b \cos \theta = c, \quad 0 \leq \theta < 2\pi$$

where  $a$ ,  $b$ , and  $c$  are constants and either  $a \neq 0$  or  $b \neq 0$ .



# OBJECTIVE 4

- ✓ 4 Solve Trigonometric Equations Using a Graphing Utility

## EXAMPLE

### Solving Trigonometric Equations Using a Graphing Utility

Solve:  $3 \cos x + x = 4$

Express the solution(s) rounded to two decimal places.