

## Section 5.3 Solving Trigonometric Equations

**Objective:** In this lesson you learned how to use standard algebraic techniques and inverse trigonometric functions to solve trigonometric equations.

Course Number

Instructor

Date

### I. Introduction (Pages 392–394)

To solve a trigonometric equation, . . .

The preliminary goal in solving trigonometric equations is . . .

How many solutions does the equation  $\sec x = 2$  have? Explain.

***What you should learn***

How to use standard algebraic techniques to solve trigonometric equations

**Example 1:** Solve  $2\cos^2 x - 1 = 0$ .

To solve an equation in which two or more trigonometric functions occur, . . .

### II. Equations of Quadratic Type (Pages 394–396)

Give an example of a trigonometric equation of quadratic type.

To solve a trigonometric equation of quadratic type, . . .

***What you should learn***

How to solve trigonometric equations of quadratic type

**Example 2:** Solve  $\tan^2 x + 2 \tan x = -1$ .

Care must be taken when squaring both sides of a trigonometric equation to obtain a quadratic because . . .

### III. Functions Involving Multiple Angles (Page 397)

Give an example of a trigonometric function of multiple angles.

***What you should learn***

How to solve  
trigonometric equations  
involving multiple angles

**Example 3:** Solve  $\sin 4x = \frac{\sqrt{2}}{2}$ .

### IV. Using Inverse Functions (Page 398–399)

**Example 4:** Use inverse functions to solve the equation  $\tan^2 x + 4 \tan x + 4 = 0$ .

***What you should learn***

How to use inverse  
trigonometric functions  
to solve trigonometric  
equations

#### Homework Assignment

Page(s)

Exercises