

**Section 5.4 Exponential and Logarithmic Equations**

**Objective:** In this lesson you learned how to solve exponential and logarithmic equations.

Course Number

Instructor

Date

**I. Introduction** (Page 409)

State the One-to-One Property for exponential equations.

State the One-to-One Property for logarithmic equations.

State the Inverse Properties for exponential equations and for logarithmic equations.

Describe how the One-to-One Properties and the Inverse Properties can be used to solve exponential and logarithmic equations.

***What you should learn***

How to solve simple exponential and logarithmic equations

**Example 1:** (a) Solve  $\log_8 x = \frac{1}{3}$  for  $x$ .

(b) Solve  $5^x = 0.04$  for  $x$ .

**II. Solving Exponential Equations** (Pages 410–411)

Describe how to solve the exponential equation  $10^x = 90$ .

***What you should learn***

How to solve more complicated exponential equations

**Example 2:** Solve  $e^{x-2} - 7 = 59$  for  $x$ . Round to three decimal places.

### III. Solving Logarithmic Equations (Pages 412–413)

Describe how to solve the logarithmic equation

$$\log_6(4x - 7) = \log_6(8 - x).$$

***What you should learn***

How to solve more complicated logarithmic equations

**Example 3:** Solve  $4 \ln 5x = 28$  for  $x$ . Round to three decimal places.

### IV. Applications of Exponential and Logarithmic Equations (Pages 414–415)

**Example 4:** Use the formula for continuous compounding,  $A = Pe^{rt}$ , to find how long it will take \$1500 to triple in value if it is invested at 12% interest, compounded continuously.

***What you should learn***

How to use exponential and logarithmic equations to model and solve real-life applications

#### Homework Assignment

Page(s)

Exercises