

Section 3.4 Solving Exponential and Logarithmic Equations

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

Course Number

Instructor

Date

I. Introduction (Page 247)

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 248–249)

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

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 250–252)

Describe how to solve the logarithmic equation $\log_6(4x - 7) = \log_6(8 - x)$ algebraically.

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. Approximating Solutions (Page 252)

Describe at least two different methods that can be used to approximate the solutions of an exponential or logarithmic equation using a graphing utility.

What you should learn
How to approximate the solutions of exponential or logarithmic equations with a graphing utility

V. Applications of Solving Exponential and Logarithmic Equations (Page 253)

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 problems

Homework Assignment

Page(s)

Exercises