MATH 1010 ~ Intermediate Algebra

Chapter 9: EXPONENTIAL AND LOGARITHMIC FUNCTIONS

Section 9.5: Solving Exponential and Logarithmic Equations

Objectives:

- Solve basic exponential and logarithmic equations.
- Use inverse properties to solve exponential and logarithmic equations.

$\log_2(x-2)=\log_2 x+3$

$500e^{-0.2x}=100$

Solve

1) $9^{x+3} = 9^{10}$

2) $\log_3(4-3x) = \log_3(2x+9)$

3) $6e^{-x} = 3$

4) $50(3 - e^{2x}) = 125$

5) $\dfrac{500}{1 + e^{-0.1x}} = 400$

6) $\dfrac{2}{3}\log_3(x+1) = -1$

7) $\log_3(x-2) + \log_3 5 = 3$

8) $\log_3(2x) + \log_3(x-1) - \log_3 4 = 1$

Applications

1) At what interest rate (compounded continuously) will you have to invest $10,000 to make sure it doubles in ten years?

2) How long will it take a bacteria culture of 200 mg to grow to 51,200 mg if it doubles every hour?