




$5x-2y \leq 75$



$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$



$S = Pe^{rt}$



$APY = (1 + \frac{r}{n})^n - 1$

Math 1090 ~ Business Algebra

Section 4.5 Logarithmic and Exponential Equations

Objectives:

- Solve equations involving logarithmic expressions.
- Solve equations involving exponential expressions.

Logarithmic and Exponential Equations

Strategies to solve equations:

Logarithmic

1. Get logs on one side of the equation.
2. Condense using log properties.
3. Use the definition of a log
to rewrite it in exponential form OR
exponentiate both sides to undo the log.
4. Continue solving.
5. Check all answers.

Sample Problem

$$\log_4(2x) = 3 - \log_4 8$$

Ex 1: Solve these equations.

a) $\ln(2x-3) = \ln 11$

b) $2 \log_4 x = 5$

c) $\log_7(2x+3) = \log_7 x - \log_7 2$

Exponential

1. Isolate the exponential.
2. Use the definition of log to rewrite as a log equation OR take the log of both sides.
3. Continue solving.

Ex 2: Solve these equations.

a) $2e^x + 3 = 13$

b) $5^{x+6} - 4 = 12$

Ex 3: Solve these equations.

a) $\log_3(2x) - \log_3(x-3) = 1$

b) $3^{2x} + 3^x = 20$

c) $\log(x^2) = (\log x)^2$

d) $\log(x^2-x) + \log 2 - \log x = 1$

Sample Problem

$$4^{x+2} = 63$$