Pre-Calculus Notes Name: _____

Section 3.4 – Solving Equations with Logarithms

Strategies for Solving Exponential and Logarithmic Equations:

1. Rewrite the original equation in a form that allows the use of One-to-One Properties of exponential or logarithmic functions.
2. Rewrite an exponential equation in logarithmic form and solve.
3. Rewrite a logarithmic equation in exponential form and solve. You may need to first use the properties of logarithms to condense the logarithmic expression.

Example 1: Solve each equation. **HINT: Rewrite in logarithmic form.**

a. $3^x + 5 = 10$	b. $4^{2x-1} - 6 = 16$

Example 2: Solve each equation. **HINT: Rewrite in exponential form.**

a. $\log_x 125 = 3$	b. $\log_x\left(\frac{9}{4}\right) = \frac{1}{2}$

Example 3: Round to 3 decimal places when needed.

a. $5 + 2\ln x = 4$	b. $e^x + 5 = 60$
c. $4^{2x-1} = 5^{x+2}$	d. $\log_3(5x-1) = \log_3(x+7)$
e. $2\log_5(3x) = 4$	f. $\log(5x) + \log(x-1) = 2$