Strategies for Solving Exponential & Logarithmic Equations

1. Rewrite the original equation in a form that allows the use of the **One-to-One Properties** of exponential or logarithmic functions.

2. If in **Exponential form**, rewrite it in **Logarithmic form**.

3. If in **Logarithmic form**, rewrite it in **Exponential form**.

Example1: Solve each equation.

a. $2^x = 512$

b. $\ln 5 - \ln x = 0$

c. $\left(\dfrac{1}{5}\right)^x = 125$

d. $e^x = 13$

e. $\ln x = -8$

f. $\log x = -2$

Example 2: Solve each equation and approximate the result to three decimal places.

a. $e^{-x^2} = e^{5x+6}$

b. $4(3^x) = 64$

c. $5 - 3e^x = 2$

d. $6(2^{t+5}) + 4 = 11$

Example 3: Solve the exponential equation that is quadratic in type.

a. $e^{2x} - 7e^x + 12 = 0$ **Algebraically**   **Graphically**

b. $e^{2x} - 4e^x - 5 = 0$ **Algebraically**   **Graphically**

Example 4: You have deposited $1000 in an account that pays 6.25% interest, compounded continuously. How long will it take for your money to double? How long will it take to triple?

Homework: Page 251-254 #5, 7, 13-61 odd, 117, 119, 144