Algebra 2 Name _____

7-6 Natural Log Date _____ **A#4**

Goal: To evaluate and solve expression and equations of natural log

Natural Log: ***e* =**

Example 1: You deposit $500 into an account that compounds interest continuously at a rate of 4.5%. Using the formula $A = Pe^{rt}$, where A is the amount you have after t years at a rate of r, P is the principal (initial amount). When you will have the following amounts?

a. $750 b. $1000 c. $1500

Example 2: Solve the exponential equation. Round each answer to the nearest hundredths.

a. $e^x = 9$

b. $e^{5-3x} + 4 = 6$

Example 3: Solve the logarithmic equation. Round your answers to three decimal places.

a. $\log(2x + 1) = 1$

b. $\ln(x + 3) - 2 = 8$

Practice

Solve the exponential equation. Round the result to three decimal places if necessary.

1. $e^x = 18$ **2.** $10^x = 350$ **3.** $e^{2x} = 42$

4. $e^x + 3 = 8$ **5.** $2^x + 7 = 10$ **6.** $5^{2x} = 8$

10. $e^{3x} + 6 = 10$ **11.** $e^{4x} - 3 = 7$ **12.** $2^{-x} + 1 = 6$

Solve the logarithmic equation. Round the result to three decimal places if necessary.

28. $\ln x = 5$ **29.** $\log_{10} x = -2$ **30.** $\log_2 x = 1.5$

31. $7 \ln x = 21$ **32.** $2 \log_{10} x = 10$ **33.** $7 + \log_{10} x = 4$

34. $-3 + \ln x = 5$ **35.** $4 - \ln x = 1$ **36.** $-5 + 2 \ln x = 5$

Compound Interest **You deposit $100 in an account that earns 3% annual interest compounded continuously. How long does it take the balance to reach the following amounts?**

37. $110 **38.** $150 **39.** $200