Name: _____ Date: _____

Period: _____ Algebra II Chapter 8 Review

1. Evaluate the following expressions without a calculator.

   a. $\log_3 81$

   b. $\ln e^{14}$

   c. $\log_x 16 = 4$

   d. $\log_4 4^{-5}$

   e. $\ln 0$

   f. $\log_3 6$ (*need a calculator!*)

   g. $\ln(-4)$

   h. $\ln \frac{1}{e^7}$

   i. $\log_2 8$

   j. $\log_9 27$

   k. $\log_5 \frac{1}{125}$

   l. $\log_5 1$

   m. $\log_x x^{5.6}$

   n. $\ln e^{-6.1}$

2. Expand the following expressions.

   a. $\log_{10} \frac{5x^3}{9y^2}$

   b. $\log_{10} \frac{\sqrt{xy^3}}{w}$

   c. $\log_{10} \frac{3x\sqrt[3]{y}}{2z^4}$

3. Condense the following expressions.

   a. $10\log_{10} x + \frac{2}{3}\log_{10} 64$

   b. $2(\log_4 18 - \log_4 6) + \frac{1}{2}\log_4 \frac{1}{25}$

   c. $\frac{1}{3}\log_{10} 27 - 2\log_{10} 6 + \frac{1}{2}\log_{10} 81$

   d. $2\ln x - 3\ln y - 4\ln 2 - 5\ln z$

4. Simplify the following.

   a. $6e^4 \cdot (-3e^{-2})^3$

   b. $e^x \cdot e^2 \cdot e^{4x-3}$

   c. $\frac{4e^{3x+1}}{2e^{x+6}}$

5. Solve the following equations.

a. $3e^{2x+1} + 4 = 19$

b. $3\ln(5x) + 6 = 27$

c. $\log_5(3x + 10) = 4$

d. $\frac{1}{2}(8)^{2x} - 3 = 17$

6. Write the equation and solve.

a. You deposit \$1500 in an account that pays 6.5% annual interest, compounded continuously. Find the balance after 10 years.

b. You deposit \$2500 in an account that pays 7.25% annual interest, compounded quarterly. How long will it take for your balance to reach \$4000?

c. You deposit \$1234 in an account that pays 5.6% interest, compounded continuously. How long before your balance doubles?

d. You purchased a rare coin in 2007 for \$128. The value of the coin increases by 12.5% each year. How much will it be worth in 2038?

e. You purchased a Blue Ray player in 2009. The value depreciates by 10.2% each year. How much will it be worth in 2015? Explain why this phenomenon occurs?