Algebra 2

Lesson 4.1/4.6 Worksheet #1

Name _____

Block _____ Date _____

Tell whether the function shows a growth of a decay.

1) $y = -\frac{1}{4} \cdot 2^x$

2) $y = \frac{1}{4} \cdot 6^x$

3) $y = -2 \cdot 2^x$

4) $y = -4 \cdot 2^x$

5) $y = -4 \cdot \left(\frac{1}{2}\right)^x$

6) $y = \frac{1}{3} \cdot \left(\frac{1}{5}\right)^x$

7) $y = \frac{1}{3} \cdot 4^x$

8) $y = 3 \cdot \left(\frac{1}{2}\right)^x$

Solve.

9) A certain car depreciates about 15% each year.
    a. Write a function to model the depreciation in value for a car valued at $20,000.

    b. Suppose the car was worth $20,000 in 2005. What is the first year that the value of the car will be worth less than half of that value? (use the graphing calculator to graph the function; use the window: xmin = 0, xmax = 10, ymin = 3,000, ymax = 20,000)

Simplify.

10) $\ln e^{7x}$

11) $\ln e^{x+4}$

12) $e^{\ln x}$

13) $e^{3 \ln x}$

14) $e^{5 \ln (x+1)}$

15) $\ln e^{x-1}$

16) $x \cdot \ln e^3$

17) $e^{-1 \cdot \ln 5x}$

18) $2 \cdot \ln e^x$