1. Write the equation of the inverse of the relation below:

$$y = \frac{2 \cdot \sqrt[5]{\frac{4x^2 - 1}{5} + 7} - 8}{11} + 3$$

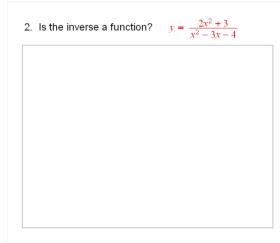2. Is the inverse a function? $y = \frac{2x^2 + 3}{x^2 - 3x - 4}$

3. Does each represent exponential Growth or Decay?
a) $y = 12,500(0.99879)^{-x}$ b) $y = 0.32(1.0031)^x$

4. State the % change modeled by this equation
and state if it's an increase or a decrease.
$y = 4800(1.0105)^x$

5. Find the base for the exponential give the following percent change.
22.401% decrease

6. The population in a city has been decreasing 2.7% each year. The population in 2004 was 142,000.
a. Find the population in 1999
b. Find the number of years until the population reaches 100,000. Round to the nearest hundredth.

7. Write each in logarithmic form.

   a) $12^x = 500$ b) $x^4 = 35$

8. Write each in exponential form.

   a) $\log 7 = x$ b) $\log_6 X = 2$

9. Use all three properties of logarithms to expand the following expression:

$$\log_4 \frac{C^2}{(B^5 \cdot \sqrt[3]{A})^2}$$

10. Use all three properties of logarithms to write as a single logarithm:

$$5\log_2 P - \frac{1}{2}\log_2 Q + 4\log_2 R$$

11. Solve. $8 \cdot 3^{2x+7} - 2 = 50$

12. Solve. $\log_2(7x + 4) - 2\log_2 x = 1$

13. Find the domain and range of the inverse of this relation: