Name:_____ Mod:_____ Chapter 3 Sections 1 and 2 classwork

Please put all work and answers **on a separate sheet of paper.** You must show all of your work.

One problem will be selected at random to be a bonus problem ☺

1. Explain how the following graphs would transform the graph of $f(x) = 5^x$
   a) $f(x) = 5^{x-1}$ b) $f(x) = 5^x + 3$ c) $f(x) = 5^{-x}$ d) $f(x) = -5^x - 4$

2. Use the one-to-one property to solve each equation for x.
   a) $2^{x-7} = 16$ b) $3^{x-1} = 27$ c) $e^{3x+2} = e^{11}$

3. A total of $3,500 is invested at an annual interest rate of 6.5%. Find the balance after 10 years if it is compounded:
   a) Quarterly   b) monthly   c) continuously

4. Write the following logarithmic equations in exponential form.
   a) $log_4 64 = 3$ b) $log_8 4 = \frac{2}{3}$ c) $log_7 \frac{1}{49} = -2$

5. Write the following exponential equations in logarithmic form $(log_a x)$
   a) $5^3 = 125$ b) $4^{-3} = \frac{1}{64}$ c) $81^{\frac{1}{4}} = 3$

6. Explain how the following graphs would transform the graph of $f(x) = log_7 x$
   a) $f(x) = -log_7(x-4)$ b) $f(x) = log_7 x + 3$ c) $f(x) = log_7(-x)$ d) $f(x) = -log_7(-x)$

7. Write the following exponential equations in the form of a natural logarithm $(\ln x)$
   a) $e^2 = 7.3890$ b) $e^{\frac{1}{2}} = 1.6487$ c) $e^{-4.1} = 0.0165$

8. Write the following natural logarithms in exponential form.
   a) $\ln 4 = x$ b) $\ln 3 = 2x$ c) $\ln 20.0855 = 3$

9. Use the one-to-one property to solve each equation for x
   a) $log_2(x-3) = 9$ b) $\log(5x+3) = \log 12$

10. Use the one-to-one property to solve each equation for x.
    a) $\ln(x-7) = \ln 15$ b) $\ln x^2 - 5x = -4$