College Algebra **Review for Test #4**

Section #1: The following problems should be done without a graphing calculator.

1. Write the exponential equation $t^W = z$ in logarithmic form.

2 Solve the equation for r. $A = C + Be^{r \cdot t}$

3. Rewrite the expression $3\log(a) - 2\log(b) + \log(c)$ as a single logarithm.

4. Sketch the graph of the following functions. Show asymptotes with dotted lines and label the x-intercept.

a. $y = \ln\left(-\frac{1}{3}x\right)$ b. $y = -\ln(x+3)$

5. If $f(x) = a + b \cdot \log_2 x$, and f(1) = 6 and f(2) = 15, find values for a and b.

6. Find the exact value of the following expressions. (Hint: When simplified, the expressions will no longer contain a log or an exponent.)

a. $\log_5\left(\frac{1}{25}\right) =$ b. $e^{\ln 10 - \ln 2} =$ c. $\log 500 - \log 5 =$ d. $\log_2 32\sqrt{2}$

7. Solve the following logarithmic equations.

a. $2\log_5 x = \log_5(4x+5)$ b. $\log(x-9) + \log x = 1$

8. If $f(x) = \frac{1}{4}e^{x-2}$, find the function $f^{-1}(x)$, the inverse of f(x).

Section 2: You may use your calculator for the following problems.

9. Evaluate: $\log_7 423 =$ _____ (Note: Write your answer to 4 decimal places.)

10. Solve the following equations. Write your answer <u>exactly</u> and as a <u>decimal</u> rounded to two decimal places. Show all work.

a. $1.2\left(2^{3x}\right) = 9$ b. $3\ln(x+45) + 5 = 17$

11. A bowl of soup initially at a temperature of 150 degrees cools in a room in which the temperature is a constant 68 degrees. After 10 minutes, the temperature of the soup is 113 degrees. Use Newton's Law of Cooling ($A(t) = C + (A_0 - C)e^{r \cdot t}$) to find the rate of change constant r.