Extra Credit – Exponentials & Logarithms **Name** _____

Evaluate the following logarithms.

1) $\log_{15}15$ =

2) $\log_{7}49$ =

3) $\log_{6}216$ =

4) $\log_{9}1$ =

5) $\log_{1/2}8$ =

6) $\log_{8}512$

7) $\log_{5}625$ =

8) $\log_{11}121$ =

9) $\log_{10}1000$ =

10) $\log_{125}5$ =

Solve the following logarithmic equations.

13) $\log_5(4x - 7) = \log_5(x + 5)$

14) $\log_4(5x - 1) = 3$

15) $3^x = \left(\frac{1}{9}\right)^{x+3}$

16) $\log_4(2x + 8) = \log_4(6x - 12)$

17) $\log_7(3x - 2) = 2$

Expand the following logarithmic equations.

11) $\log_4 \frac{x^3}{5y^2}$

12) $\ln \frac{6x^2y^3}{5z^4}$

Condense the following logarithmic equations.

18) $\ln 40 + 2\ln(0.5) + \ln x$

19) $2(\log_3 20 - \log_3 4) + 0.5\log_3 4$

Use the following formulas to solve problems #20 – 24.

$A = P\left(1 + \frac{r}{n}\right)^{nt}$ $A = Pe^{rt}$ $y = (1+r)^t$ $y = (1-r)^t$

20) You deposit $5500 in an account that pays 2.92% annual interest. Find the balance after 3 years if the interest is …

a) Compounded quarterly

b) Compounded weekly

21) You deposit $2000 in your savings account. Determine how long it would take to quadruple the amount of money in your account if it is being compounded continuously.

22) In 1990, the population of Austin, Texas was 494,290. During the next 10 years, the population increased about 3% per year. What was the population of Austin, Texas in 1996?

23) You buy a new stereo for $1300 and are able to resell is 4 years later for $275. What is the rate at which the stereo is losing value?

24) You deposit $100 in an account that pays 6% annual interest. How long will it take for the balance to reach $1000 for each of the given frequency of compounding?

a) Annual

b) Quarterly

c) Continuously