ALGEBRA II JOURNAL
Exponential & Logarithmic Functions

1. An exponential function has a constant _____ and a variable _____.

2. An example of an equation which represents exponential growth is _____

   while exponential decay can be represented by equations in the form _____ and

   _____.

3. (a) e is called the _____ number because _____.

   . (b) *e* was discovered by _____.

   (c) The value of *e* to 6 decimal places is _____.

4. The relationship between exponential and logarithmic functions is that _____

   _____.

5. Logarithms represent _____.

6. Provide the following information for the graphs of each of the following functions.

   $$y = 8^x \qquad y = \log_8 x$$

   (a) Location of the asymptote   _____   _____

   (b) Coordinate that appears in every exp/log function   _____   _____

   (c) Change each equation above to make it shift right and down   _____   _____

   (d) Change each equation above to make it reflect over the *x*-axis. _____   _____

   (e) Change each equation above to make it reflect over the *y*-axis. _____   _____

7. The two special types of logarithms are _____ logarithms which have base _____ and

   _____ logarithms which have base _____.

8. The steps for solving an equation containing one or more logs are:

   1) _____

   2) _____

9. The purpose of logarithms in mathematics and the real world is to solve for _____.

10. To solve a problem like $25^{x+3} = 125^{2x-1}$ you would _____

    while you would solve a problem like $11^x = 219$ by _____

11. (a) After setting up the equation for a real world application problem in which you need to solve

    for the exponent, the first thing you must do to begin solving the problem is _____

    _____.

    (b) The second step is to move _____ using:

    _____ logs (if the base is a constant) OR _____ logs (if the problem

    has base *e*).

12. List the following rules, facts, or formulas.
    a) Three properties of logarithms

    b) List four <u>specific</u> examples of how exponential and/or logarithmic functions may be used in the real world. (Example: "Determine the number of …"

        1.

        2.

        3.

        4.

    c) Graph $y = 2^x$ and $y = \log_2 x$. Show the T-table of values used to create each graph.

    d) *Attach the formula sheet for the real-world application problems.*