Name_____

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.

   $$y = 9^x \qquad y = \log_9 x$$

   (a) Location of the asymptote   _____   _____

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

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

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

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

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

8. (a) If a logarithmic equation has a logarithm on both sides of the equal sign, you should
   _____

   (b) If a logarithmic equation has a logarithm on only ONE side of the equal sign, you should
   _____

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

10. To solve a problem like $13^x = 158$ you would _____
    while you would solve a problem like $27^{x-4} = 9^{2x}$ 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 use _____ if the base is a constant to move the exponent
    _____ or use _____ if the problem has base *e*.

12. List the following rules, facts, or formulas.

    a) Show how to change between exponential form and logarithmic form.

       <u>Exponential form</u>   <u>Logarithmic form</u>

    b) Three properties of logarithms

    c) List four real world applications of exponential and/or logarithmic functions and describe what they would be used to find in that situation.

       1.

       2.

       3.

       4.

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

    e) Attach the formula sheet for the real world application problems.