Exploring exponential functions NAME:

We will look at what makes an exponential function increase or decrease. We will practice graphing these functions and using the e button on the calculator. We will also review transformations.

1. Make up and draw a quick graph of an exponential function that increases. Be sure to write the function's formula down too. What about the *formula* tells you the graph will increase?

2. Find the following on your calculator. Round to three decimal places.

a.) $6e^4$

b.) $5e^2 + 3$

c.) $-4e$

d.) $\left(\frac{1}{e^2}\right)^2$

3. Graph the following on the same set of axes. Use the window [-5, 5] x [-1, 10] for a closer look. Be sure to get the shapes correctly drawn (with horizontal asymptotes in mind). Your graphs should have accurate *y*-intercepts (use tick marks) and arrows on both ends. Label each function on the graph so we know which is which.

a.) $y = e^x$

b.) $y = e^{3x}$

c.) $y = e^x + 3$

4. For the previous question, you drew a mother function, $f(x) = e^x$, and two transformations of this mother function. Give the proper names of those transformations.

Transformation in part *b* above:

Transformation in part *c* above: