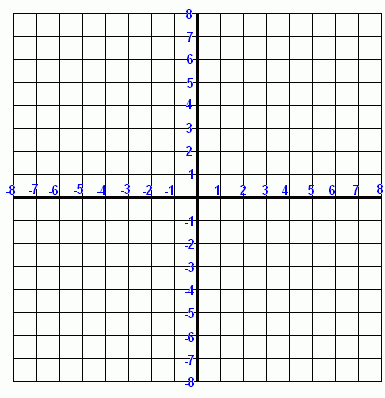
**Exponents and Logarithms**

1. Sketch a graph of

a)  b) 

Restrictions: Restrictions:





2. Use transformations to sketch the graph of



Determine the equation of the asymptote.



3. Exponential form Logarithm form

a)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



b) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 



c)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



d) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 



**Laws of Logs**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Change of Base Law**  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



1. Evaluate  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



2. Write as a single logarithm:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



3. Estimate, then use your calculator to determine the value of . \_\_\_\_\_\_\_\_\_\_\_\_\_



Solve:

1.  2. 



Solve:

a) 



b)





c) Determine the time in years it will take an investment of $500 to double when it is invested in an account that pays 2.5% annual interest, compounded semi-annually.



d) A sample of soda water has a pH of 3.6. A sample of vinegar has a pH of 2.8.

i) Which sample is more acidic?

ii) How many times as acidic is the sample?

