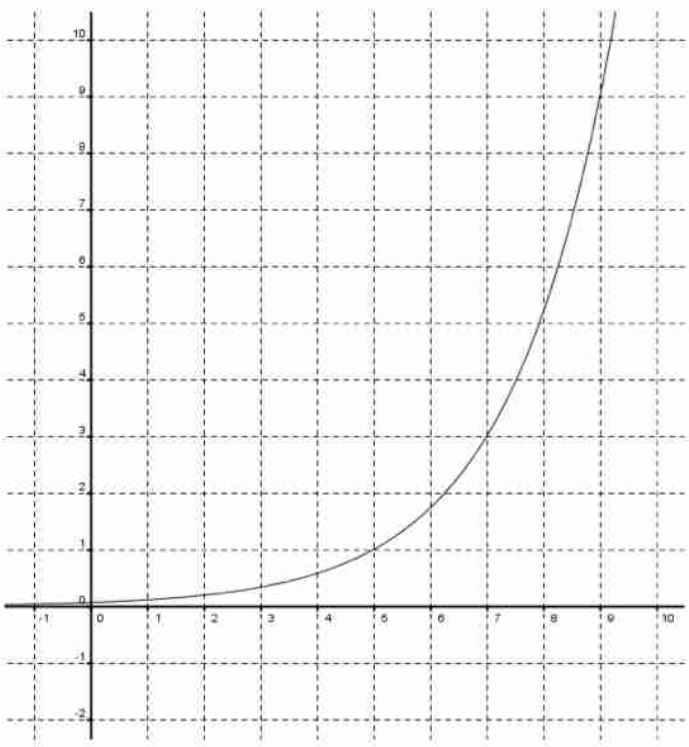
Finding the Equation of an Exponential Function, Given its Graph

Step 1 – Draw the horizontal asymptote

Step 2 – Choose any "nice" point to be your "1st Point". Draw a vertical line through it.

Step 3 – Find other "nice" points on your curve. There should be a constant amount you're going left/right to get to each one.



Step 4 – As you go to the right, how far are each of these points from the horizontal asymptote? This is your base.

Step 5 – Build your function!

$$y = \pm a\,(b)^{k(x-c)} + d$$

$$y = \quad (\quad)^{(x\quad)}$$

from 1st point

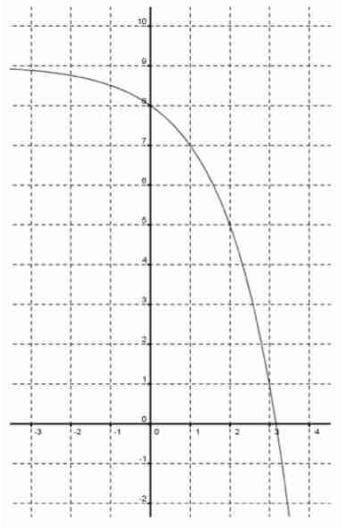
each nice point is **this many times** higher than the one before it.

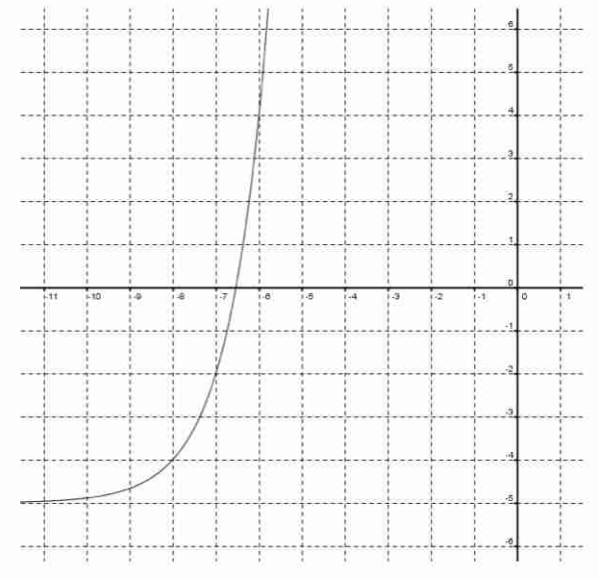
from new origin

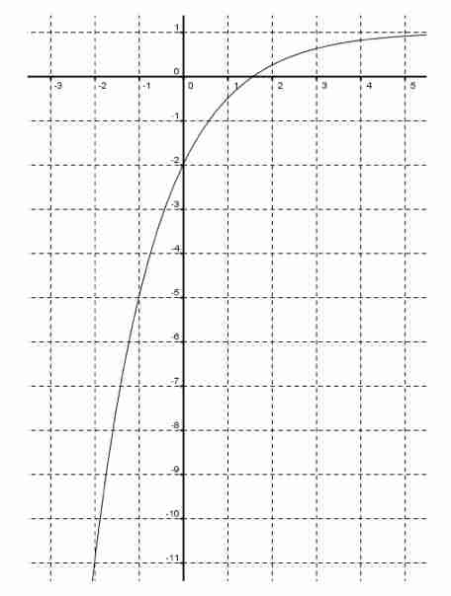
how far **over** is each "nice" point?

Note: Because we're finding our base by going to the **right** on our graph, our exponent will never be negative.

Build equations for each of the following:

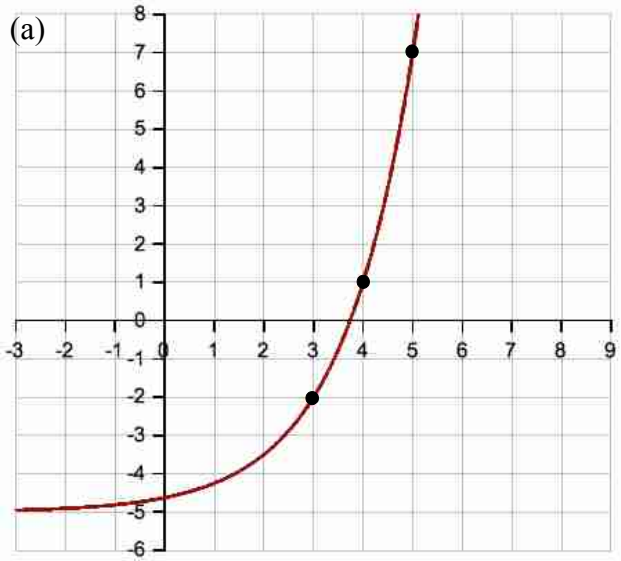




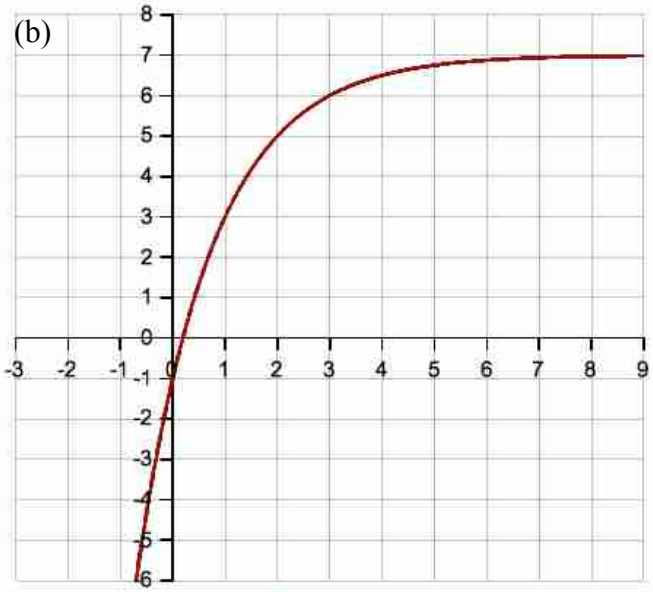


Homework: 1. Find the equation for each of the following graphs.

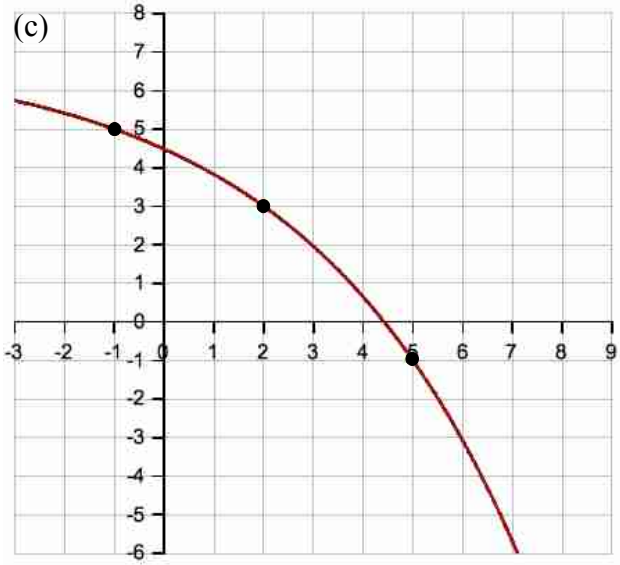
(a)



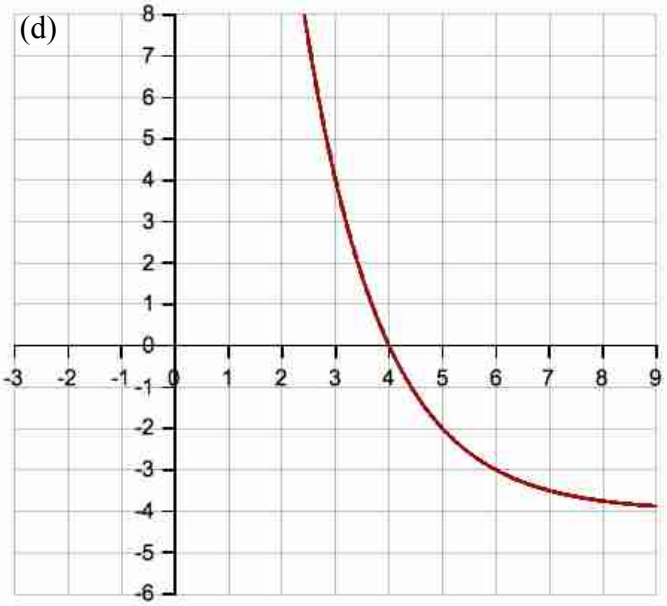
(b)



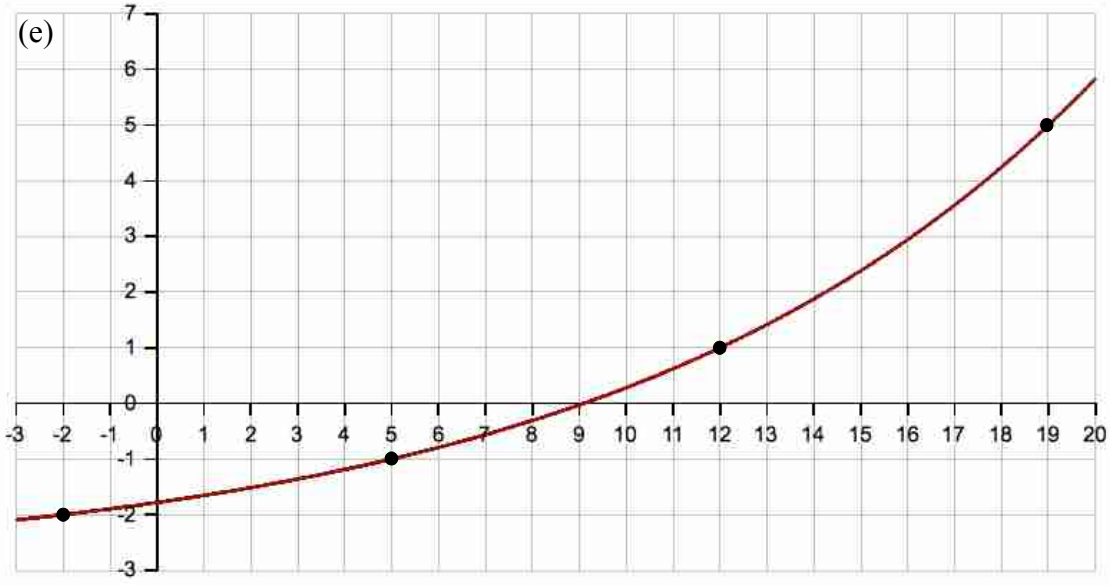
(c)



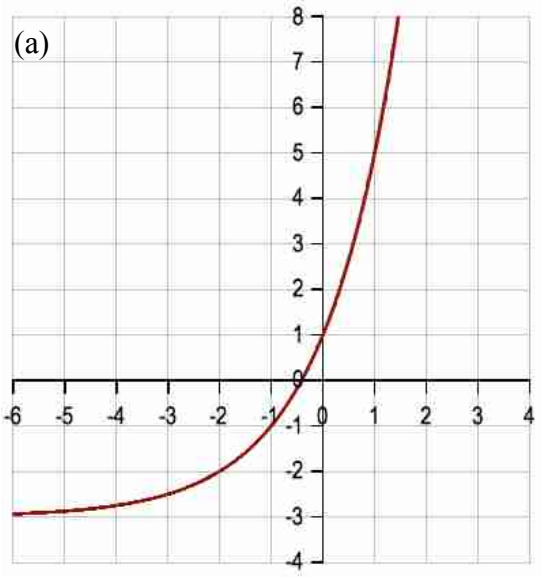
(d)

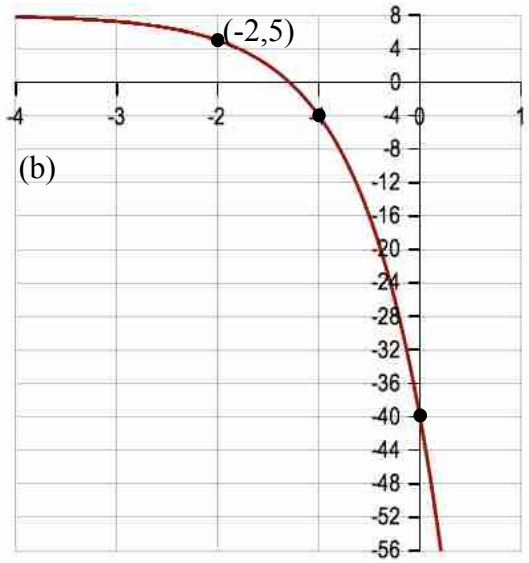


(e)



2. Write **three equivalent** exponential expressions that represent each of the following functions:





3. Refresher: Graph the function $y=-(\frac{1}{2})^{\frac{(x+2)}{2}}+5$