

Name: Guide

Date: _____

Exponential Model: $y = a(b)^x$

a = start value

b = what you multiply or divide by (common ratio)

1. Alexis was working in the biology lab on her cell project. She started her experiment with 500,000 cells. Every day, the cells die by a third.

Write an equation to represent how many cells would be left after each day.

$$y = 500,000\left(\frac{2}{3}\right)^x \quad \frac{1}{3} \text{ die, so } \frac{2}{3} \text{ are left.}$$

How many cells will Alexis have in 9 days? Round to the nearest tenth.

$$y = 500,000\left(\frac{2}{3}\right)^9 = 13,006.1$$

2. The following table represents how the amount of caffeine in your system each hour after drinking a grande coffee.

x	c(x)
0	330
1	165
2	82.5
3	41.25
4	20.625

- a. Write an equation based on the information:

- b. How many hours would it take to have less than 1mg of caffeine left in your system?

3. Sally has a leaking faucet in her bathroom. When she first noticed the leak, there was a puddle that was 2 inches in diameter. Each hour, the diameter will triple in size. If Sally doesn't do anything to stop the leak, how large will the puddle be after 10 hours?

$$y = 2(3)^x$$

$$y = 2(3)^{10} = 118,098 \text{ in. in diameter}$$

Solve each equation for x

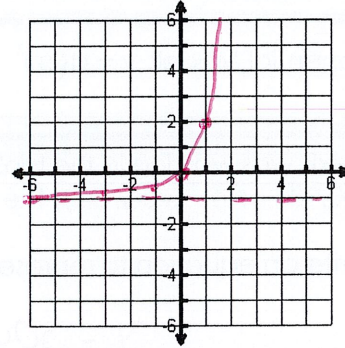
$$4(25)^{x+1}$$

$$5(8)^{x-8}$$

1. Graph the Function: $y = (3)^x - 1$

Asymptote: $y = -1$

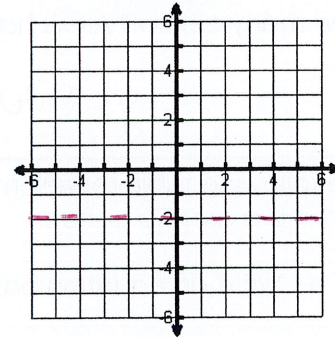
x	y
-2	$-8/9 \approx .49$
-1	$-2/3 \approx .67$
0	0
1	2
2	8



2. Graph the Function: $y = \left(\frac{1}{2}\right)^x - 2$

Asymptote: $y = -2$

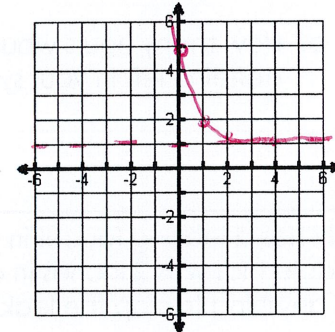
x	y



3. Graph the Function: $y = 4\left(\frac{1}{4}\right)^x + 1$

Asymptote: $y = 1$

x	y
0	5
1	2
2	$5/4 = 1.25$
3	$17/16 = 1.06$
4	$65/64 = 1.02$



4. Graph the Function: $y = -(3)^x - 4$

Asymptote: $y = -4$

x	y

