UNIT 1 • RELATIONSHIPS BETWEEN QUANTITIES

Lesson 3: Creating and Graphing Equations in Two Variables *graph #1 & 3 others*

Practice 1.3.2: Creating and Graphing Exponential Equations

Use a table of values to graph the following exponential equations.

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

2. $y = 1000(0.25)^x$

Write an equation to model each scenario, and then graph the equation.

3. A population of insects doubles every month. This particular population started out with 20 insects.

4. The half-life of rhodium, Rh-106, is about 30 seconds. You start with 500 grams.

5. A stock is declining at a rate of 25% of its value every 2 weeks. The stock started at $225.

6. A weed species triples in 6 days. A field started with 12 weeds in the early spring.

7. The population of a big city is increasing at a rate of 2.5% per year. The city's current population is 67,000.

8. An investment of $1,000 earns 3.7% interest and is compounded semi-annually.

9. An investment of $600 earns 2.9% interest and is compounded quarterly.

$$y = 600\left(1 + \frac{0.029}{4}\right)^{4x}$$

↖ 4

$y = \$$ in the year x

$x =$ years account is active

10. ~~An investment of $3,000 earns 1.4% interest and is compounded weekly.~~

$$y = 600(1.00725)^{4x}$$

November 9, 2015
In class wb pg. 75
1.3.2 Create and graph exp. equations

①

X	$2(3)^x$	y	
-2	$2(3)^{-2}$	0.22	(-2, 0.22)
-1	$2(3)^{-1}$	0.67	(-1, 0.67)
0	$2(3)^0$	2.0	(0, 2)
1	$2(3)^1$	6.0	(1, 6)
2	$2(3)^2$	18.0	(2, 18)
3	$2(3)^3$	54.0	(3, 54)

plot -3 | $2(3)^{-3}$ | 0.07 | (-3, 0.07)

start
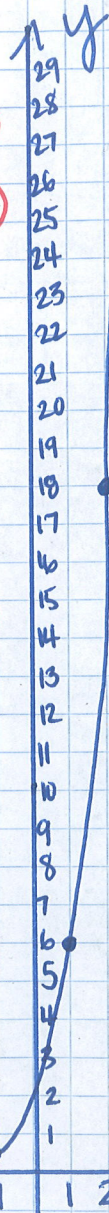
③ $y = 20(2)^x$ occurance

Insects   doubles each month

X	$20(2)^x$	y	
0	$20(2)^0 = 20$	20	(0, 20)
1	$20(2)^1$	40	(1, 40)
2	$20(2)^2$	80	(2, 80)
3	$20(2)^3$	160	(3, 160)

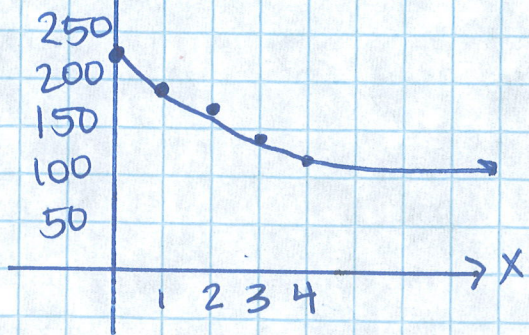⑤ $y = 225(1 - .25)^{\frac{x}{2}}$ (decay!) remember the exponent is the occur-

$y = 225(.75)^{x/2}$

weeks

When is each occurance? →

1st

2nd

X	$225(.75)^{x/2}$	Y
0	$225(.75)^{0/2}$	225
1	$225(0.75)^{1/2}$	194.9
2	$225(0.75)^{2/2}$	168.75
3	$225(0.75)^{3/2}$	146.14
4	$225(0.75)^{4/2}$	126.56
5	$225(0.75)^{5/2}$	

⑦ $y = 67000(1 + 0.025)^x$

$y = 67000(1.025)^x$

X	$67000(1.025)^x$	Y
0	$67000(1.025)^0$	67000
1	$67000(1.025)^1$	68675
2	$67000(1.025)^2$	70392
3	$67000(1.025)^3$	72152
4	$67000(1.025)^4$	73955
5	$67000(1.025)^5$	75804