

1. Classify each of the following exponential functions as either increasing or decreasing and give the value of their y-intercepts.

a)  $f(x) = 125(1.25)^x$

**Increasing**  
**y-int: 125**

b)  $f(x) = 22(0.75)^x$

**Decreasing**  
**y-int: 22**

c)  $f(x) = 256\left(\frac{5}{2}\right)^x$

**Increasing**  
**y-int: 256**

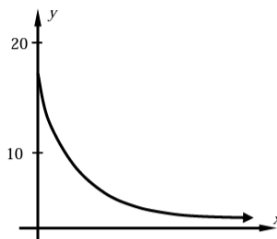
2. Which of the following could be the equation to the exponential function graphed below?  
Explain how you made your choice.

(1)  $y = 15(1.25)^x$

(2)  $y = 50(1.04)^x$

(3)  $y = 18(0.75)^x$

(4)  $y = 40(0.45)^x$

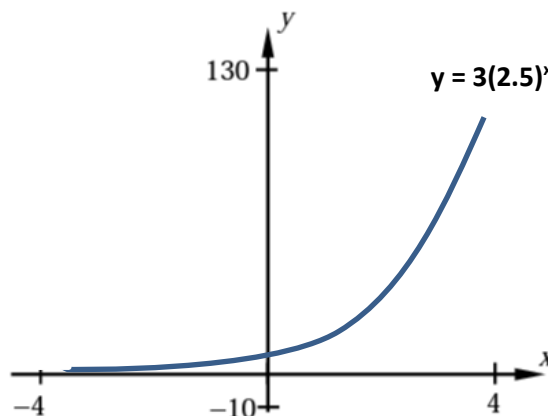


**(3)  $y = 18(0.75)^x$**

**The graph shows a y-intercept of 18 and it is a decreasing function.**

3. Using your graphing calculator, create a table of values and draw a sketch of the exponential function  $y = 3(2.5)^x$  over the interval  $-4 \leq x \leq 4$ . Use the window indicated.

x	y
-4	.0768
-3	.192
-2	.48
-1	1.2
0	3
1	7.5
2	18.75
3	46.875
4	117.19



What is the average rate of change of the function over the given interval?

Begin: (-4, .0768) End: (4, 117.19)  $\frac{\Delta y}{\Delta x} = \frac{117.19 - .0768}{4 - (-4)} = \frac{117.1132}{8} = \mathbf{14.63915}$

4. Which of the following is a decreasing exponential function whose y-intercept is 20?

(1)  $y = 20\left(\frac{4}{3}\right)^x$

(2)  $y = -2x + 20$

**(3)  $y = 20(1/3)^x$**

(3)  $y = 20\left(\frac{1}{3}\right)^x$

(4)  $y = \left(\frac{1}{3}\right)^x + 20$

**The graph shows a y-intercept of 20 and it is a decreasing function because b is in between 0 and 1.**

5. Which of the following functions would best describe the data in the table?

(1)  $y = 10x + 2$

(2)  $y = 8x + 2$

(3)  $y = 5(2)^x$

(4)  $y = 2(5)^x$

**y-intercept**

x	0	1	2	3	4
y	2	10	50	250	1250

**(4)  $y = 2(5)^x$**

**The graph shows a y-intercept of 2.**

**Check:**

$$2(5)^1 = 10$$

$$2(5)^2 = 2(25) = 50$$

$$2(5)^3 = 2(125) = 250$$

**Etc...**