

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Exponential functions (practice makes perfect)**

In order to help you use your notes better, this activity will have you FULLY answer each problem at the top of the section (with work AND correct answer) and then you will complete similar problems below

Example: For the sequence given **a)** determine the explicit formula **b)** Find the next two terms and **c)** find  $a_{10}$

2, -12, 72, -432....

1) 1, 3, 9, 27, ....

2) -3, -15, -75, -375...

3) 4, 8, 16, 32....

4) -1, 4, -16, 64...

Example: **a)** Determine the *percent* change in the sequence given **b)** determine if it is a growth or a decay function

200, 230, 264.50, 304.18...

5) 80, 72, 64.8, 58.32...

6) 50, 65, 84.50, 109.85....

7) 2, 2.02, 2.04, 2.06....

8) 60, 45, 33.75, 25.31....

Example: Determine all of the transformations of the exponential function given

$$f(x) = -3(.75)^{x+2} - 5$$

9)  $f(x) = 4(2)^x + 7$

10)  $f(x) = -\frac{1}{3}(4)^{x-3}$

11)  $y = -3(.9)^{x+1} + 2$

12)  $y = 7^{x-1} + 2$

Example: Analyze all of the key features of the graph

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

X-Intercept: \_\_\_\_\_

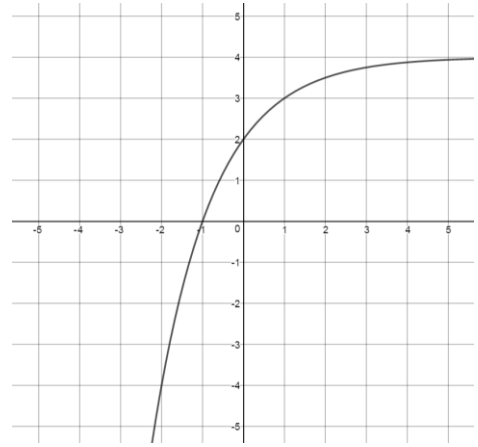
Asymptote: \_\_\_\_\_

Growth or Decay?

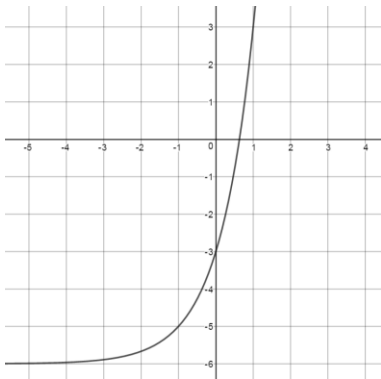
Increasing/Decreasing?

End Behavior  $As x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_

$As x \rightarrow +\infty, y \rightarrow$  \_\_\_\_\_



13)



Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

X-Intercept: \_\_\_\_\_

Asymptote: \_\_\_\_\_

Growth or Decay?

Increasing/Decreasing?

End Behavior  $As x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_

$As x \rightarrow +\infty, y \rightarrow$  \_\_\_\_\_

14)

Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

X-Intercept: \_\_\_\_\_

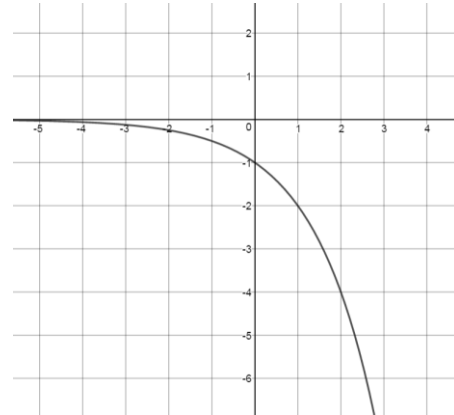
Asymptote: \_\_\_\_\_

Growth or Decay?

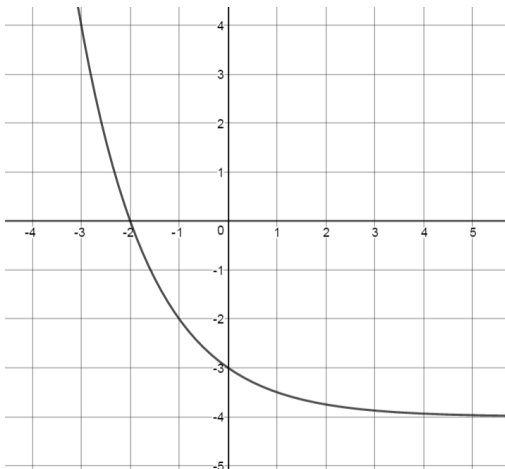
Increasing/Decreasing?

End Behavior  $As x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_

$As x \rightarrow +\infty, y \rightarrow$  \_\_\_\_\_



15)



Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Y-intercept: \_\_\_\_\_

X-Intercept: \_\_\_\_\_

Asymptote: \_\_\_\_\_

Growth or Decay?

Increasing/Decreasing?

End Behavior  $As x \rightarrow -\infty, y \rightarrow$  \_\_\_\_\_

$As x \rightarrow +\infty, y \rightarrow$  \_\_\_\_\_

Example: Graph the exponential function and answer the questions provided

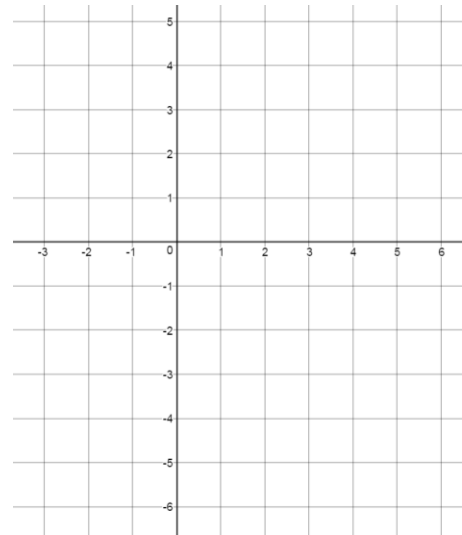
$y = -2(3)^x + 1$	
x	y
-2	
-1	
0	
1	

Asymptote: \_\_\_\_\_

Growth/Decay?

Y-intercept \_\_\_\_\_

Range



16)

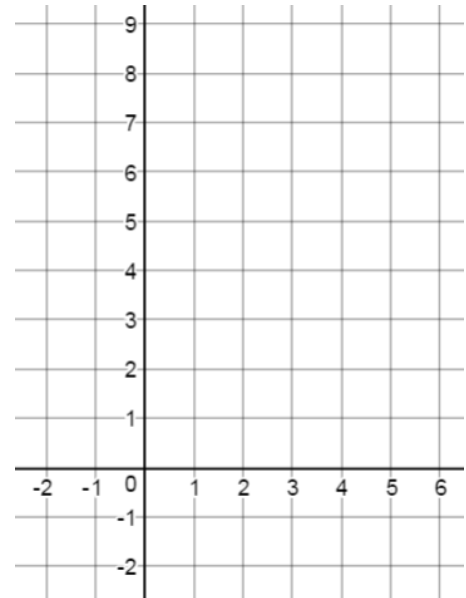
$y = 2\left(\frac{1}{4}\right)^{x-1}$	
x	y
0	
1	
2	
3	

Asymptote: \_\_\_\_\_

Growth/Decay?

Y-intercept \_\_\_\_\_

Range \_\_\_\_\_



17)

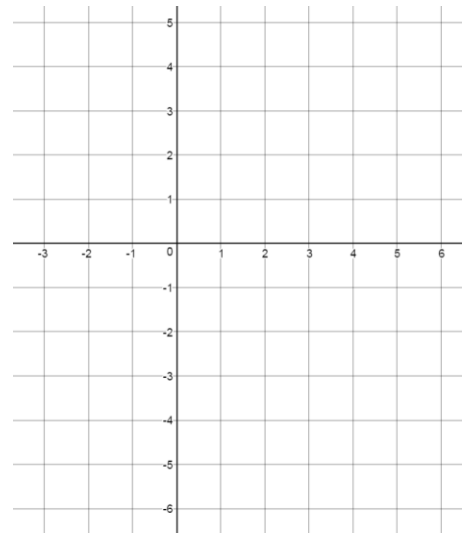
$y = -2(0.5)^x + 4$	
x	y
-2	
-1	
0	
1	

Asymptote: \_\_\_\_\_

Growth/Decay?

Y-intercept \_\_\_\_\_

Range



Example: Mariana and is currently 15 is saving up money for a laptop for college when she turns 18. Her bank offers her an interest rate of 6.8%. What is the least amount of money she can put into the savings account now in order to have enough if the laptop costs \$600?

18) In 2016 there was an outbreak of E coli across 20 states from flour found in General Mills cereal. The amount of E coli bacteria present can double every hour. If you had cereal that was found to have six bacteria of E Coli, how many would be in your cereal in one day?

19) Jackson bought a new xbox one for \$399. He expects the price to decrease by 21% every year. How much could he expect to sell it for in two years (when he predicts there will be a new xbox console released)

20) Margaret invested \$20,000 in a 401K retirement fund which pays 4.5% interest. How much **more** money will Margaret have when she retires in 30 years than what she started with?

21) The 64 GB iPhone 5 was released in 2012 with a price of \$399. The phone depreciates in value by 15% each year. If you bought an 64 GB iPhone 5 in 2012. How much could you expect to sell it for now? How much money did you lose on this investment?