

For #1 – 4: You deposit \$500 into a savings account that earns 6% interest each year and you do not make any deposits or withdrawals.

- 1) What is the initial amount?
- 2) What is the growth factor?

- 3) Write an equation to model this situation. Use y for the total value of the account and t for the number of years.

- 4) What is the value of this account in 25 years? Round to two decimal places, as needed.

For #5 – 8: You are given a car worth \$9500 on your 16th birthday. The value of the car declines by 15% per year.

- 5) What is the initial amount?
- 6) What is the decay factor?

- 7) Write an equation to model this situation. Use y for the total value of the car and t for the number of years after your 16th birthday.

- 8) What is the value of the car in 5 years? Round to two decimal places, as needed.

For #9 – 10: A petri dish contains 4 million bacteria cells at time $x = 0$ minutes, and the number of bacteria cells in the petri dish doubles every minute.

- 9) Write an equation to model this situation. Use A for the total number of bacteria cells and x for the number of minutes that have passed.

- 10) How many bacteria cells are in the petri dish after 5 minutes?

For #11 – 12: Samantha buys a house for \$425,000. Unfortunately, the value of the house decreases by 7% each year.

- 11) Write an equation to model this situation. Use y for the value of the house and t for the number of years.

- 12) Find the value of the home after 15 years. Round to two decimal places, as needed.

Complete the 7.1 Self-Reflection on the back of this page.

7.1 Self-Reflection

A) Look at the topics below. What is your level of understanding at this time?

Topic	Select one option below.		
	I can help others with this	I understand most of this but get a bit confused.	I need help on this topic.
I can find the initial value for an exponential problem.			
I can find the growth or decay rate for an exponential problem.			
I can write an equation to model exponential growth or decay situations.			
I can use an exponential growth or decay equation to solve problem.			

B) What is one goal for this unit? Consider selecting a behavior goal (attending each class, doing all assignments) or a performance goal (getting a certain score on the test).

For #1 – 6, determine if each exponential function describes GROWTH or DECAY.

1) $y = 25(1.20)^x$

2) $f(x) = 1250(.65)^x$

3) $y = 1.17^x$

4) $f(t) = -2.3 \cdot 5^t$

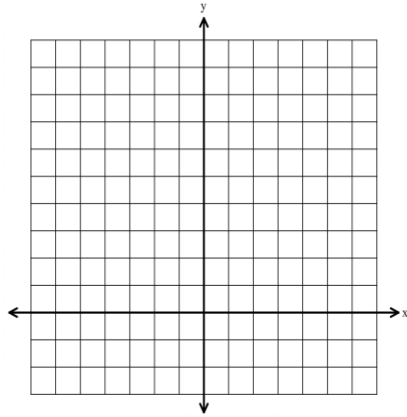
5) $f(x) = .15(2)^{-x}$

6) $y = -3\left(\frac{1}{6}\right)^{-x}$

For #7 – 12, graph each exponential growth or decay function. Include the horizontal asymptote and at least two points on your graph (one of which is the initial value when $x = 0$).

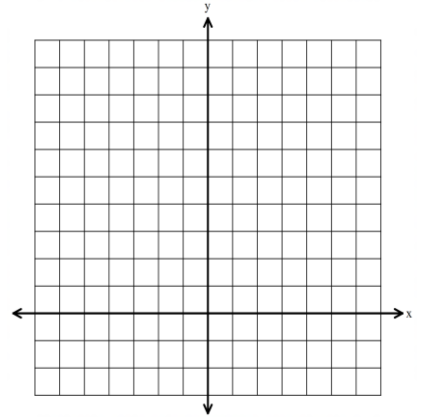
7) $y = 4^x$

x	y



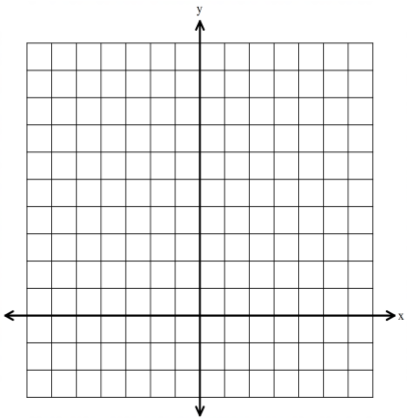
8) $h(x) = 2(5)^x$

x	y



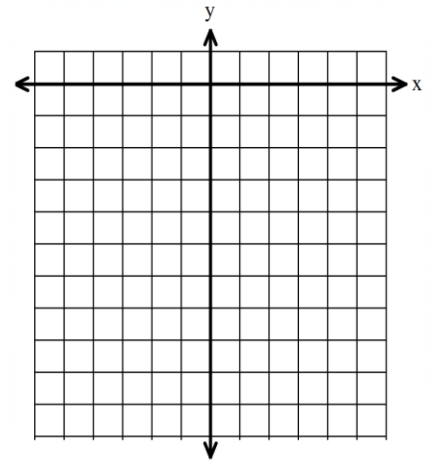
9) $y = \left(\frac{1}{3}\right)^x$

x	y

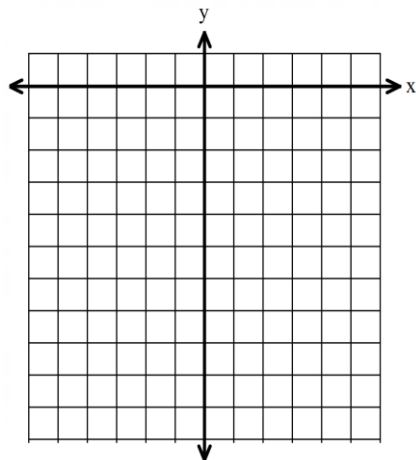


10) $f(x) = -3 \cdot (2)^x$

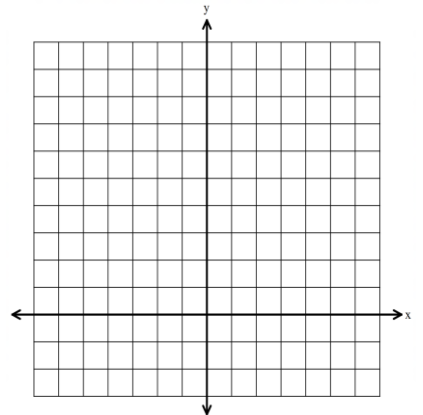
x	y



11) $g(x) = -4\left(\frac{1}{2}\right)^x$



12) $y = 5\left(\frac{1}{4}\right)^x$



Complete the 7.2 Self-Reflection on the back of this page.

7.2 Self-Reflection

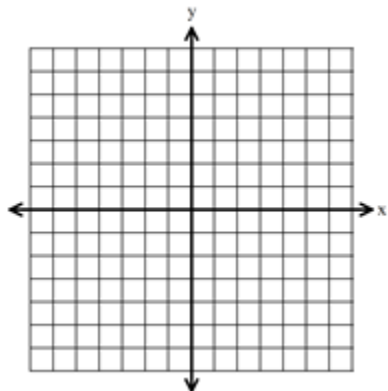
A) What did you understand well from the 7.2 lesson?

B) What do you need additional clarification from on the 7.2 lesson?

C) What resources can you use to get the help you need to be successful in this class?

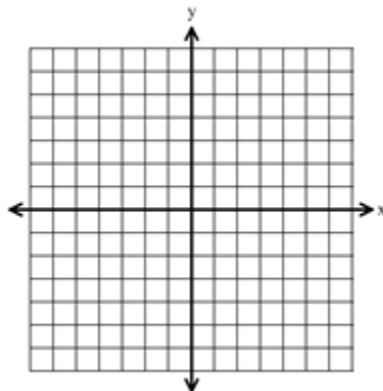
For #1 – 6, graph each exponential function, and identify the requested information.

1) $y = 3^x + 2$



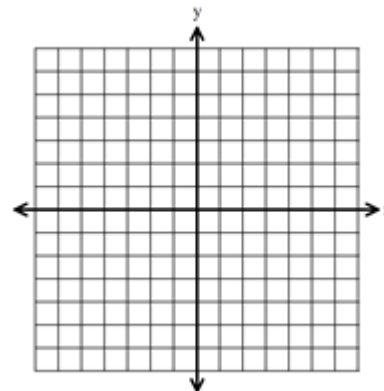
HA	
Anchor point	
Growth or decay?	

2) $f(x) = 5^{x-2} - 1$



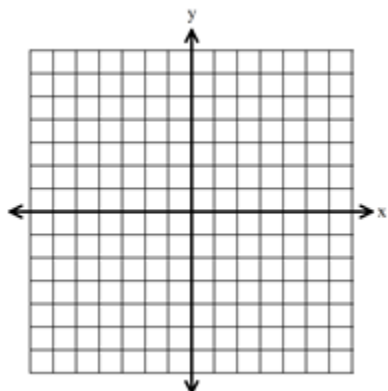
HA	
Anchor point	
Growth or decay?	

3) $y = \left(\frac{1}{2}\right)^{x+5} - 2$



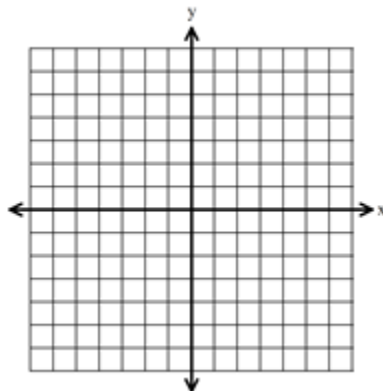
HA	
Anchor point	
Growth or decay?	

4) $g(x) = 2^x + 1$



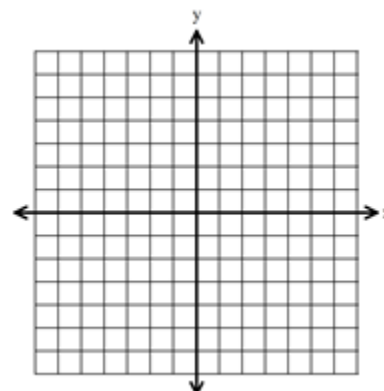
HA	
Anchor point	
Growth or decay?	

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



HA	
Anchor point	
Growth or decay?	

6) $y = \left(\frac{1}{4}\right)^{x+5}$



HA	
Anchor point	
Growth or decay?	

For #7 – 10: Describe the transformations from $f(x)$ to $g(x)$.

7) $f(x) = 2^x; g(x) = -3 \cdot 2^{x-1}$

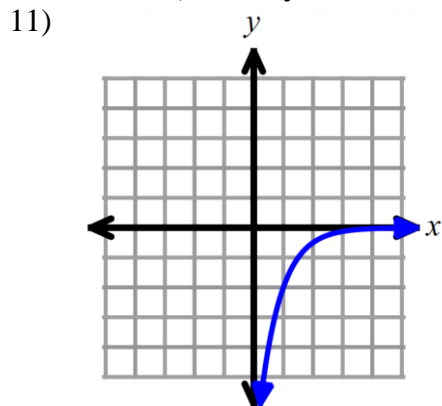
8) $f(x) = \left(\frac{1}{4}\right)^x; g(x) = -\left(\frac{1}{4}\right)^x - 1$

9) $g(x) = 2f(x + 4) - 3$

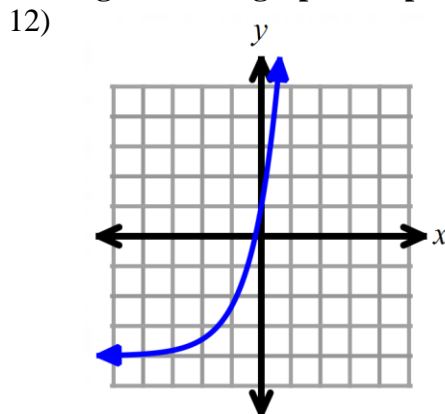
10) $g(x) = -f(x) + 3$

7.3 worksheet, continued.

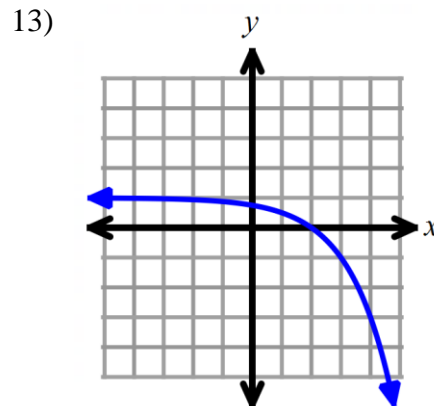
For #11 – 13, identify the domain and range for each graphed exponential function.



Domain	
Range	



Domain	
Range	



Domain	
Range	

7.3 Self-Reflection

A) What level of frustration did you experience while doing this assignment?

- 0 1 2 3 4
 No frustration A small amount of frustration Frustrated half the time Frustrated most the time Frustrated all of the time

B) How confident were you on each of the following portions of the assignment? Use the scale below.

- 0 1 2 3 4
 Not confident Slightly confident Confident half the time Confident most the time Confident all of the time

Portion	Confidence Scale Value
Graphing an exponential function	
Describing transformations of exponential functions	
Finding the domain and range of an exponential function	

For #1 – 6, write the explicit form for each geometric sequence. Use this formula: $a_n = a_1 \cdot r^{n-1}$

1) 5, 15, 45, 135, ...

2) 200, 100, 50, 25, ...

3) 48, 12, 3, $\frac{3}{4}$, ...

4) 2, 16, 128, 1024, ...

5) 30, 300, 3000, 30000, ...

6) 800, 40, 2, $\frac{1}{10}$, ...

7) For the geometric sequence described in #4, find a_{11} .8) For the geometric sequence described in #2, find a_8 .

For #9 – 15, describe each function as linear or exponential.

9)

x	-2	-1	0	1	2
y	1	2	4	8	16

10)

x	-2	-1	0	1	2
y	$\frac{1}{25}$	$\frac{1}{5}$	1	5	25

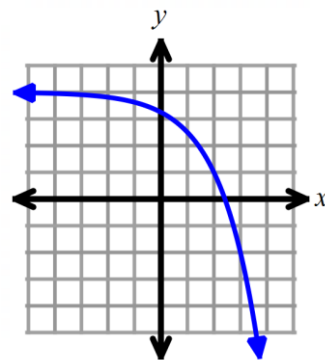
11) $y = -6x + 9$

12)

x	-2	-1	0	1	2
y	16	19	22	25	28

13) $y = 3 \cdot (2)^x$

14)



For #15 – 18, identify whether the exponential function models growth or decay.

15) $f(x) = 2(4)^x$

16) $y = \left(\frac{1}{3}\right)^x + 2$

17) $y = (1.5)^x$

18) $y = 3\left(\frac{2}{5}\right)^x$

19) **Multiple Choice.** Select which exponential function below models this situation: Lupe bought a gold chain for \$350, and the value of the chain increases by 4% per year. Use y for the value of the chain and t for the time in years.

A) $y = 350^{4x}$

B) $y = 350(4)^x$

C) $y = 350(1.4)^x$

D) $y = 350(1.04)^x$

7.4 Reflection is on the next page.

7.4 Reflection

A) **How much do you agree with this statement?** I showed persistence on this assignment, because I tried the problems that were hard for me, and I gave my best effort even when it was challenging.

- 1) strongly disagree 2) disagree 3) agree 4) strongly agree

B) **How much do you agree with this statement?** When I felt frustrated on this assignment, I was able to calm myself down and then focus on trying the problems.

- 1) strongly disagree 2) disagree 3) agree 4) strongly agree

C) **How much do you agree with this statement?** When I needed help on this assignment, I used **appropriate** resources (such as my notes, watching a video, getting help from others) to try to understand the material.

- 1) strongly disagree 2) disagree 3) agree 4) strongly agree

D) Are you proud of your effort on this assignment? Why or why not?

For #1 – 4: Sam buys a car for \$55,000. The value of the car depreciates at a rate of 15% per year.

- 1) What is the initial value?
- 2) What is the decay factor?
- 3) Write an exponential function to model the value of the car (y) after t years.
- 4) Find the value of the car after 4 years.

For #5 – 6: Christina purchases a new home at a cost of \$425,000. The value of the home increases by 20% each year.

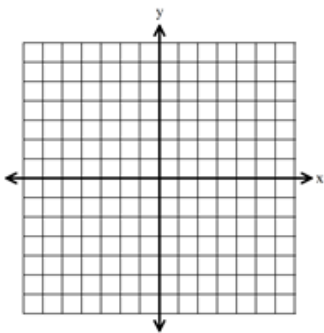
- 5) Write an exponential equation to model the value of the home. Use A for the value of the home and x for the number of years after she purchased the home.
- 6) Find the value of the home after 10 years.

For #7 – 9, decide if each exponential function represents growth or decay.

- 7) $y = -3(5)^x - 2$
- 8) $y = 10\left(\frac{2}{5}\right)^x$
- 9) $y = (7)^{-x}$

For #10 – 11, graph each exponential function and find the requested information.

10) Graph $y = 4^x + 3$

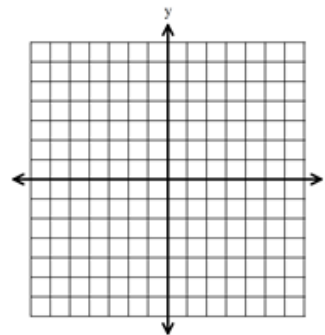


Growth or Decay?

Anchor Point:

Horizontal Asymptote:

11) Graph $y = 3 \cdot \left(\frac{1}{4}\right)^{x+1} - 2$

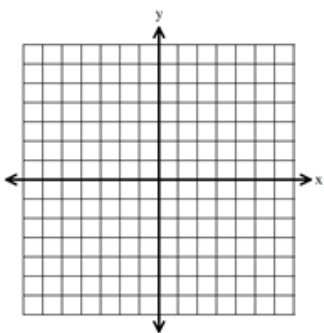


Growth or Decay?

Anchor Point:

Horizontal Asymptote:

12) Graph $y = -2 \cdot 3^{x+1} - 5$

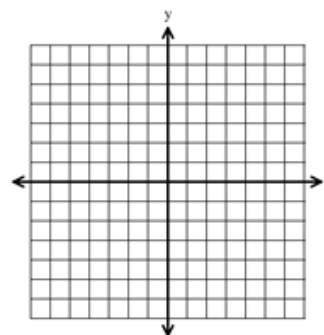


Growth or Decay?

Anchor Point:

Horizontal Asymptote:

13) Graph $y = -\left(\frac{1}{2}\right)^{x-3} + 2$



Growth or Decay?

Anchor Point:

Horizontal Asymptote:

Ch 7 Review Worksheet, continued.

For #14 – 17: Describe the transformations from $f(x)$ to $g(x)$.

14) $f(x) = 2^x; g(x) = -2^{x+5}$

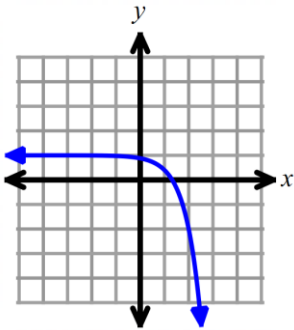
15) $f(x) = \left(\frac{1}{4}\right)^x; g(x) = 3 \cdot \left(\frac{1}{2}\right)^x + 4$

16) $g(x) = -5f(x - 1) - 2$

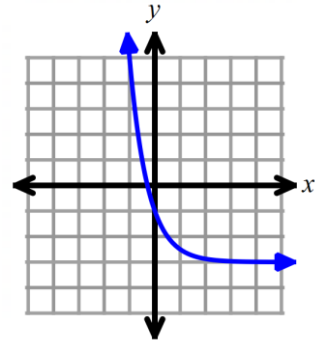
17) $g(x) = -f(x) + 7$

For #18 – 19, find the domain and range of each graphed exponential function.

18)



19)



For #20 – 22, write the explicit form for each geometric sequence. Use $a_n = a_1 \cdot r^{n-1}$.

20) 20, 40, 80, ...

21) 500, 100, 20, 4, ...

22) 6, 18, 54, 162, ...

23) For the geometric sequence described in #22, find a_8 .

For #24 – 29: Determine if each function is linear or exponential.

24)

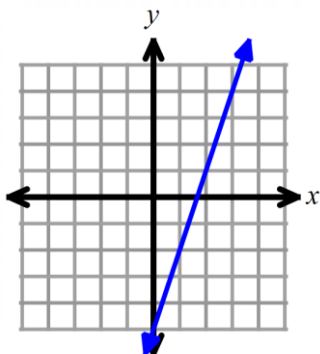
x	0	1	2	3
y	3	10	17	24

25)

x	0	1	2	3
y	32	16	8	4

26) $y = -2\left(\frac{4}{3}\right)^x + 5$

27)



28) $5x - 3y = 8$

29)

