February 25, 2019, Monday

This is the EOC formula sheet for Algebra 1...

write down three eqns you have used before....

Define at least 5 of the variables in the eqns you have used...

Feb 15-10:49 AM

Transformations of
EXPONENTIAL FUNCTIONS

inverts the exponential (reflect)

horizontal Shift

$$f(x) = -a(b)^{x \pm h} \pm k$$

adjusts the steepness of the exponential

Vertical Shift

examples
$f(x) = -3(2)^x$
$f(x) = 3(\frac{1}{3})^{x+3}$
$f(x) = (6)^x - 4$

non-examples
$y = 2x + 6$
$f(x) = -\frac{1}{2}x$

Feb 15-10:50 AM

Characteristics

SAME FOR EVERY EXPONENTIAL GRAPH:

Zeros: x-intercepts (#, 0)

Y-intercept: (0, #)

Domain: $(-\infty, +\infty)$

Average Rate of change: From point A(x₁, y₁) to point B(x₂, y₂) is $\frac{y_2 - y_1}{x_2 - x_1} = m$ Asymptote: $y = \underline{\quad K \quad}$

For an EXPONENTIAL that goes UP TO THE RIGHT:
Range: (k (asymptote), +∞)
Interval of Increase: (−∞, +∞)
Interval of Decrease: NONE
End Behavior:
As x→ −∞, f(x) → k (asymptote)
As x→ +∞, f(x) → +∞
$y = k$

For an EXPONENTIAL that goes DOWN TO THE RIGHT:
Range: (−∞, k (asymptote))
Interval of Increase: NONE
Interval of Decrease: (−∞, +∞)
End Behavior:
As x→ −∞, f(x) → k (asymptote)
As x→ +∞, f(x) → −∞
$y = k$

For an EXPONENTIAL that goes UP TO THE LEFT:
Range: (k (asymptote), +∞)
Interval of Increase: NONE
Interval of Decrease: (−∞, +∞)
End Behavior:
As x→ −∞, f(x) → +∞
As x→ +∞, f(x) → k (asymptote)
$y = k$

For an EXPONENTIAL that goes DOWN TO THE LEFT:
Range: (−∞, k (asymptote))
Interval of Increase: (−∞, +∞)
Interval of Decrease: NONE
End Behavior:
As x→ −∞, f(x) → −∞
As x→ +∞, f(x) → k (asymptote)
$y = K$

Feb 15-10:51 AM

Algebra 1 – Day 1, 2/26/2018   Graphing Exponential Functions NOTES
Today's Question: How do I solve an exponential equation algebraically? MCC9-12.A.CED.1

Graphing Exponential Functions

$$y = a(b)^x$$

1. $y = 2^x$
$y = 2^{-2}$
$y = 2^{-1}$
$y = 2^0$

x	y
-2	.25
-1	.5
0	1
1	2
2	4

2. $y = 3^x$
$y = 3^{-2}$

x	y
-2	.111
-1	.333
0	1
1	3
2	9

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

x	y
-2	4
-1	2
0	1
1	.5
2	.25

Feb 15-10:51 AM

Writing Exponential Equations Notes

$$y = a(b)^x$$
$y = 4(\frac{1}{2})^x$

$a = 4$
$b = \frac{1}{2}$

a is the y value, when x = 0

1. Bacteria can multiply at an alarming rate when each bacterium splits into two new cells, thus doubling.

Hour	0	1	2	3	4	5	6	7	8	9	10	11	12	13	...	24
Bacteria	2	4	8	16	32	64	128	256	512	1024	2048	4096	8192	16384	...	33554432

a. Write an equation that represents this situation.
$y = 2(2)^x$
$b = \frac{y_3}{y_2} = \frac{4}{2} = 2$
$b = \frac{y_2}{y_1} = \frac{4}{2} = 2$

b. After how many hours will there be over 1 million bacteria?
$\frac{1000000}{2} = \frac{2(2)^x}{2}$ $500000 = 2^x$ Guessing   X = 15
$2^{15} = 32768$
X = 20
$2^{20} = 1048576$

2. Given the following table, write the equation that represents the information:

X	f(x)
-2	729
-1	243
0	81
1	27
2	9
3	3

$y = 81(\cdot 3)^x$
$b = \frac{y_2}{y_1} = \frac{243}{729} = .3$

3. Each year the local country club sponsors a tennis tournament. Play starts with 128 participants. During each round, half of the players are eliminated.

Rounds	0	1	2	3	4	5	6
Number of Players left	128	64	32	16	8		2

a. Write an equation for this scenario.
$y = 128(\frac{1}{2})^x$ $b = \frac{y_2}{y_1} = \frac{64}{128}$

b. How many players are left after 8 rounds?
$y = 128(\frac{1}{2})^x$

4. A colony of insects triples every day. If the colony has 80 insects today, how many will be present in 10 days?
$y = 80(3)^x$ x = 0 $y = 80(3)^{10}$ $y = 4723920$

Feb 15-10:52 AM

Algebra 1 ~ Day 1, 2/26/2018   Graphing & Working with Exponentials HW   Name _____
Fill in the table for each exponential function and then graph the function.

1. $y = 2^x$

x	y
-3	.125 0.125
-2	.25 0.25
-1	.5
0	1
1	2
2	4
3	8

2. $y = 5^x$

x	y
-3	.008
-2	.04
-1	.2
0	1
1	5
2	25
3	125

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

x	y
-3	27
-2	9
-1	3
0	1
1	.333
2	.111
3	.037

Feb 15-10:52 AM

Feb 15-10:52 AM

Writing Exponential Models HW

Exponential Model: $y = a(b)^x$
  a = start (y)
  b = what you multiply or divide by (rate of change)

[handwritten in red: $B \rightarrow Y$ ...]

1. Your brother tells you a secret. You see no harm in telling two friends. After this second "passing" of the secret, 4 people now know the secret (your brother, you and two friends). If each of these friends now tells two new people, after the third "passing" of the secret, eight people will know. Write an equation to express the "passing" of the secret. If this pattern of spreading the secret continues, how many people will know the secret after 10 such "passings"?

[handwritten: $y = 1(2)^x$ $y = 1(2)^{10}$ $y = 1024$]

2. Alexis was working in the biology lab on her own project. She started her experiment with 200,000 cells. Every day, the cells die by a third. Write an equation to represent how many cells could be left after each day. How many days will it take to have fewer than 100 cells left?

[handwritten: Instra gram $y = 1(200)^x$ $y = 1(200)^{10} = 1.024e^{23} = 1024000000000000000000000$]

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

   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?

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

4. 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?

Feb 15-10:53 AM

Graphing/Writing Exponential Equations TOTD (2/26)   Name _____

Graph the given exponential functions.

$y = 4^x$

x	f(x)
−3	
−2	
−1	
0	
1	
2	
3	

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

x	f(x)
−3	
−2	
−1	
0	
1	
2	
3	

Given the table below, write the equation that represents the information:

x	−2	−1	0	1	2
f(x)	1296	216	36	6	1

A field of flowers is beginning to grow near your house. At first, there were 12 flowers but you notice that the flowers are doubling every day.

   a. Write an equation to represent this situation.

   b. How many flowers will there be after 15 days?

Feb 15-10:53 AM

Graphing/Writing Exponential Equations TOTD (2/26)   Name _____

Graph the given exponential functions.

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

x	f(x)
−3	
−2	
−1	
0	
1	
2	
3	

$y = 6^x$

x	f(x)
−3	
−2	
−1	
0	
1	
2	
3	

Given the table below, write the equation that represents the information:

x	−2	−1	0	1	2
f(x)	1	6	36	216	1296

A field of flowers is beginning to grow near your house. At first, there were 5 flowers but you notice that the flowers are doubling every day.

   a. Write an equation to represent this situation.

   b. How many flowers will there be after 15 days?

Feb 15-10:53 AM

February 26, 2019, Tuesday

State 2 characteristics of each exponential graph.

1) $f(x) = 3 \cdot \left(\frac{1}{2}\right)^x$ 2)

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

Feb 15-10:54 AM

Algebra 1 ~ Day 2, 2/27/2018   Characteristics Notes EXAMPLES

Give the transformations that have taken place from the parent function of $f(x) = 2^x$.

   a) $f(x) = 3(2)^{x-4} + 4$ b) $f(x) = -\frac{1}{3}(2)^{x+2} - 3$

   c) $f(x) = \frac{1}{2}(2)^{x-1}$ d) $f(x) = 3 + 2^x$

$y = -5^x$

Transformations: _____
Domain _____ Range _____ Asymptote _____
Interval _____ X-intercept _____ Y-intercept _____
End Behavior
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
Average Rate of change [0, 1]:

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

Transformations: _____
Domain _____ Range _____ Asymptote _____
Interval _____ X-intercept _____ Y-intercept _____
End Behavior
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
Average Rate of change [1, 2]:

$y = 2^{x+1}$

Transformations: _____
Domain _____ Range _____ Asymptote _____
Interval _____ X-intercept _____ Y-intercept _____
End Behavior
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
Average Rate of change [0, 2]:

Feb 15-10:56 AM

Algebra 1 ~ Day 2, 2/27/2018   Transformations & Graphing Exponentials HW   Name _____

Give the transformations that have taken place from the parent function of $f(x) = 2^x$.

1. $f(x) = 2^{x+3} - 5$ 2. $f(x) = 2^{x-4}$ 3. $f(x) = -2^x - 1$

$y = 2^{x+1}$

Transformations: _____
State 3 points on Graph _____
Domain _____ Range _____
Asymptote _____ Interval _____
X-intercept _____ Y-intercept _____
End Behavior
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
Average Rate of change [−2, 0]:

$y = -3^{x+1} - 2$

Transformations: _____
State 3 points on Graph _____
Domain _____ Range _____
Asymptote _____ Interval _____
X-intercept _____ Y-intercept _____
End Behavior
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
   $x \rightarrow -\infty, f(x) \rightarrow$ _____
Average Rate of change [−2, 0]:

Panel 1 (Feb 15-10:56 AM)

TOTD ~ Transformations/Characteristics
Graph & identify all characteristics.   Name _____

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

Transformations: _____

x	y
-2	
-1	
0	
1	
2	

Domain_____ Range_____

Asymptote_____

Interval (circle one)   INCREASE   DECREASE

X-intercept _____   Y-intercept _____

End Behavior
  $x \to -\infty, f(x) \to$ _____
  $x \to \infty, f(x) \to$ _____

Average Rate of change [-2, 0]:

TOTD ~ Transformations/Characteristics
Graph & identify all characteristics.   Name _____

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

Transformations: _____

x	y
-1	
0	
1	
2	
3	

Domain_____ Range_____

Asymptote_____

Interval (circle one)   INCREASE   DECREASE

X-intercept _____   Y-intercept _____

End Behavior
  $x \to -\infty, f(x) \to$ _____
  $x \to \infty, f(x) \to$ _____

Average Rate of change [-1, 0]:

Feb 15-10:56 AM

Panel 2 (Feb 15-10:56 AM)

Algebra 1 ~ Day 2, 10/3/2017   Unit 4 Practice Quiz   Name _____

1) Use the given graph to identify the characteristics.

Domain _____
Range _____
Asymptote _____
X-Intercept _____
Y-Intercept _____
End Behavior:
As $x \to -\infty, y \to$ ___
As $x \to \infty, y \to$ ___
Circle one:
Increasing = Decreasing
AROC [0, 1]:

2) Use the given graph to identify the characteristics.

Domain _____
Range _____
Asymptote _____
X-Intercept _____
Y-Intercept _____
End Behavior:
As $x \to -\infty, y \to$ ___
As $x \to \infty, y \to$ ___
Circle one:
Increasing = Decreasing
AROC [-1, 0]:

Fill in the table for each exponential function and then graph the function.

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

x	y
-3	
-2	
-1	
0	
1	
2	
3	

4) $f(x) = 5^x$

x	y
-3	
-2	
-1	
0	
1	
2	
3	

5) $f(x) = \left(\frac{1}{5}\right)^x$

x	y
-3	
-2	
-1	
0	
1	
2	
3	

Feb 15-10:56 AM

Panel 3 (Feb 15-10:57 AM)

Consider the parent function $f(x) = \left(\frac{1}{2}\right)^x$. How would the original graph be transformed if:

a) $f(x) = 2\left(\frac{1}{2}\right)^x$

b) $f(x) = \left(\frac{1}{2}\right)^x - 5$

c) $f(x) = \left(\frac{1}{2}\right)^{x+4}$

d) $f(x) = -\left(\frac{1}{2}\right)^x$

e) $f(x) = -\frac{1}{4}\left(\frac{1}{2}\right)^{x-3} + 5$

Write an equation for the given graphs:

a)

b)

Feb 15-10:57 AM

Panel 4 (Feb 15-10:57 AM)

Feb. 27, 2019, Wednesday

Copy the exponential graph, state the:
domain, range, asymptote, interval of increase or interval of decrease, x-intercept, y-intercept, and end behavior

1)

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

Feb 15-10:57 AM

Panel 5 (Feb 15-10:58 AM)

Day 3 ~ 2/27/2018   Exponential Growth & Decay Notes

$f(x) = a(b)^x$

a = _____   b = _____   x = _____

$f(x) = 2(1.5)^x$ $f(x) = 2(0.5)^x$

Growth: _____   Decay: _____

Another formula: $f(x) = a(1 + r)^t$

a = _____   r = _____   t = _____

$f(x) = 2(1 + 0.5)^t$ $f(x) = 2(1 - 0.5)^t$

1) The number of fish in a pond is increasing at a rate of 12% per month. At the beginning of the year, there were 130 fish in the pond. Write a function modeling the number of fish in the pond. Use the function to find the number of fish in the pond after 8 months.

Starting amount:	Growth Factor:	Function:	Number of fish after 8 months:
a = _____	b = 1 + _____	f(x) = _____	f(8) = _____

2) Tom bought a used car for $7,500.00. The value of his car depreciating by 18% per year. Write a function modeling the value of Tom's car after x years. How much will his car be worth in 10 years?

3) An illness is spreading throughout the community. Currently 6 people are infected. The number of people who have been infected is doubling every day. Write a function modeling the number of people infected after x days. Approximately, how long will it take for 190 people to become infected?

Feb 15-10:58 AM

Panel 6 (Feb 15-10:59 AM)

Day 3 ~ 2/28/2018   Growth/Decay HW   Name _____

$Growth: y = P(1 + r)^t$ $Decay: y = P(1 - r)^t$

1) The mice population is 25,000 and is decreasing by 20% each year. Write a model for this situation. What will be the mice population after 3 years?

2) The number of mosquitoes at the beach has tripled every year since 1999. In 1999, there were 2,500 mosquitoes. Write a model for this situation. How many mosquitoes would you predict were at the beach in 2005?

3) I bought a car for $25,000, but its value is depreciating at a rate of 10% per year. How much will my car be worth after 8 years?

4) Your starting salary at a new company is $34,000 and it increase by 2.5% each year. What will your salary be in 5 years?

5) In 2010 an item cost $9.00. The price increase by 1.5% each year. How much will it cost in 20 years?

6) The yearly profits of a company are $25,000. The profits have been decreasing by 6% per year. What will be the profits in 8 years?

7) You bought $2000 worth of stocks in 2012. The value of the stocks has been decreasing by 10% each year. What will your stock be worth in 5 years?

8) Your car cost $42,500 when you purchased it in 2015. The value of the car decreases by 15% annually. How much will your car be worth in 7 years?

Feb 15-10:59 AM

Slide 1

Feb. 28, 2019, Thursday

Identify as growth or decay

2 graphs & 2 equations

The the exponential growth of decay?

1)

2)

3) $y = 4 \cdot 2^x$

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

Feb 15-10:59 AM

Slide 2

Algebra 1 ~ Day 3, 10/4/2017   Unit 4 Quiz 1A   Name _____

1. Consider the parent function $f(x) = 4^x$. How would the original graph be transformed if it were to be changed to $f(x) = 4^{(x+1)} - 2$?
   a) right 1 and down 2
   b) left 1 and down 2
   c) right 2 and down 1
   d) left 2 and down 1

2. Identify the characteristics of the function below.
   Domain _____
   Range _____
   Asymptote _____
   X-intercept _____
   Y-intercept _____
   Circle one:
   Increasing or Decreasing
   End Behavior:
   As $x \to -\infty$, $y \to$ _____
   As $x \to \infty$, $y \to$ _____

3. Ms. Graham has 3 tulips in her garden. The number of tulips in her garden doubles every month. Write an equation to represent how many tulips are in her garden.
   A. $y = 3(3)^x$
   B. $y = 2(3)^x$
   C. $y = 3(2)^x$
   D. $y = (2)^x$

4. Calculate the average rate of change of the graph over the interval [0, 2].

5. Write an exponential equation given the table.

x	-3	-2	-1	0	1	2	3
y	½	1	2	4	8	16	32

   A. $y = 2(2)^x$
   B. $y = 1(4)^x$
   C. $y = 4(8)^x$
   D. $y = 4(2)^x$

6. Write an equation for the given graph.
   A. $f(x) = 2 \cdot 3^x$
   B. $f(x) = 3 \cdot 2^x$
   C. $f(x) = 5 \cdot 2^x$
   D. $f(x) = 2 \cdot 2^x$

7. Graph the exponential function:
   $h(x) = \left(\frac{1}{2}\right)^x$

x	h(x)
-3	
-2	
-1	
0	
1	
2	
3	

Feb 15-11:00 AM

Slide 3

Algebra 1 ~ Day 3, 10/4/2017   Unit 4 Quiz 1B   Name _____

1. Consider the parent function $f(x) = 4^x$. How would the original graph be transformed if it were to be changed to $f(x) = 4^{(x-1)} - 2$?
   a) right 1 and down 2
   b) left 1 and down 2
   c) right 2 and down 2
   d) left 2 and down 1

2. Identify the characteristics of the function below.
   Domain _____
   Range _____
   Asymptote _____
   X-intercept _____
   Y-intercept _____
   Circle one:
   Increasing or Decreasing
   End Behavior:
   As $x \to -\infty$, $y \to$ _____
   As $x \to \infty$, $y \to$ _____

3. Ms. Graham has 3 tulips in her garden. The number of tulips in her garden doubles every month. Write an equation to represent how many tulips are in her garden.
   A. $y = (2)^x$
   B. $y = 3(3)^x$
   C. $y = 2(3)^x$
   D. $y = 3(2)^x$

4. Calculate the average rate of change of the graph over the interval [-1, 0].

5. Write an exponential equation given the table.

x	-3	-2	-1	0	1	2	3
y	½	1	2	4	8	16	32

   A. $y = 4(2)^x$
   B. $y = 2(2)^x$
   C. $y = 1(4)^x$
   D. $y = 4(8)^x$

6. Write an equation for the given graph.
   A. $f(x) = 2 \cdot 2^x$
   B. $f(x) = 2 \cdot 3^x$
   C. $f(x) = 3 \cdot 2^x$
   D. $f(x) = 5 \cdot 2^x$

7. Graph the exponential function:
   $h(x) = \left(\frac{1}{3}\right)^x$

x	h(x)
-3	
-2	
-1	
0	
1	
2	
3	

Feb 15-11:01 AM

Slide 4

Day 4 ~ Geometric Sequences Notes

Geometric Recursive Formula: Geometric Explicit Formula:

	Common ratio	Recursive Formula	Explicit Formula
1, 2, 4, 8, 16, ...			
$10, -2, \frac{2}{5}, -\frac{2}{25}, ...$			
5, 15, 45, 135, ...			
320, 80, 20, 5, ...			

1. Find the first five terms of the geometric sequence defined as follows:
   $g_n = -1(3)^{n-1}$

2. Find the first five terms of the geometric sequence defined as follows:
   $g_n = g_{n-1} \cdot \frac{1}{4}$, $g_1 = 216$

3. A colony of ants starts with 5 members. The colony triples every year.
   a. Write an explicit function to represent the sequence.
   b. How many members will the colony have after 3 years?
   c. How many years will it take for the colony to reach greater than 1,000 ants?

4. Find the common ratio and the missing term in the sequence
   7, 21, 63, _____, 567, ...

Feb 15-11:02 AM

Slide 5

Geometric Sequences HW   Name _____

Find the next three terms in each geometric sequence.

1. 2, 4, 8, 16, ...
2. 400, 200, 100, 50, ...
3. 4, -12, 36, -108, ...

Find the missing term(s) in each geometric sequence.

4. _____, _____, 1, -3, 9, ...
5. _____, 6, 18, _____, ...

Write the recursive rule and explicit rule for each geometric sequence.

6. 9, 27, 81, 243, ...   Explicit: _____   Recursive: _____
7. 5, -5, 5, -5, ...   Explicit: _____   Recursive: _____
8. 12, 3, ¾, 3/16, ...   Explicit: _____   Recursive: _____

9. The first term of a geometric sequence is 1, and the common ratio is 10. What is the 10th term of the sequence?

10. What is the 11th term of the geometric sequence 3, 6, 12, 24, ...?

11. A construction company is building houses in a neighborhood. During the 1st month they built 3 homes, during the 2nd month they built 6 homes, and during the 3rd month they built 12 homes.
    a. Write the recursive rule for the sequence.
    b. Write the explicit rule for the sequence.
    c. When will the construction company build 48 homes?

Feb 15-11:04 AM

Slide 6

Algebra 1   Name _____   ID: 1
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Geometric Sequence Practice   Date _____   Period ____

State if each sequence is geometric.

1) -4, 8, -16, 32, ...   2) 2, -12, -26, -40, ...

3) 11, 17, 23, 29, ...   4) 4, 12, 36, 108, ...

5) -10, -5, 0, 5, ...   6) -2, -12, -72, -432, ...

7) 1, 6, 36, 216, ...   8) 9, 99, 999, 9999, ...

Find the common ratio.

9) -4, 8, -16, 32, ...   10) -3, 9, -27, 81, ...

11) 2, 8, 32, 128, ...   12) 4, 12, 36, 108, ...

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Feb 15-11:04 AM

Panel 1 (Feb 15-11:04 AM)

13) 3, −9, 27, −81, ...   14) −1, −4, −16, −64, ...

15) 3, 6, 12, 24, ...   16) −4, 20, −100, 500, ...

Given the recursive formula for a geometric sequence find the first five terms.

17) $a_n = a_{n-1} \cdot 3$ $a_1 = 1$ 18) $a_n = a_{n-1} \cdot 5$ $a_1 = 2$

19) $a_n = a_{n-1} \cdot 5$ $a_1 = -1$ 20) $a_n = a_{n-1} \cdot 4$ $a_1 = -2$

21) $a_n = a_{n-1} \cdot -4$ $a_1 = -0.5$ 22) $a_n = a_{n-1} \cdot 2$ $a_1 = -1$

23) $a_n = a_{n-1} \cdot \frac{1}{2}$ $a_1 = 4$ 24) $a_n = a_{n-1} \cdot 2$ $a_1 = -3$

Feb 15-11:04 AM

Panel 2 (Feb 15-11:04 AM)

Given the explicit formula for a geometric sequence find the 8th term.

25) $a_n = \frac{3}{2} \cdot \left(-\frac{1}{2}\right)^{n-1}$ 26) $a_n = -4 \cdot (-2)^{n-1}$

27) $a_n = -3 \cdot (-2)^{n-1}$ 28) $a_n = -3 \cdot \left(\frac{1}{3}\right)^{n-1}$

29) $a_n = 32 \cdot \left(\frac{1}{2}\right)^{n-1}$ 30) $a_n = 2^{n-1}$

31) $a_n = 2 \cdot 4^{n-1}$ 32) $a_n = -\frac{2}{3} \cdot \left(\frac{1}{2}\right)^{n-1}$

Find the recursive formula.

33) −0.5, 1, −2, 4, ...   34) 3, $\frac{3}{2}$, $\frac{3}{4}$, $\frac{3}{8}$, ...

35) 972, 324, 108, 36, ...   36) 1, 5, 25, 125, ...

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Panel 3 (Feb 15-11:05 AM)

37) 375, 75, 15, 3, ...   38) 4, 20, 100, 500, ...

39) −1, 6, −36, 216, ...   40) 1, $-\frac{1}{2}$, $\frac{1}{4}$, $-\frac{1}{8}$, ...

Find the explicit formula.

41) −3, 6, −12, 24, ...   42) 125, −25, 5, −1, ...

43) 2, 1, $\frac{1}{2}$, $\frac{1}{4}$, ...   44) −2, 10, −50, 250, ...

45) −0.2, −1, −5, −25, ...   46) 1875, 375, 75, 15, ...

47) 32, 16, 8, 4, ...   48) −3, −9, −27, −81, ...

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Panel 4 (Feb 15-11:05 AM)

March 1, 2019, Friday

2 highly missed from quiz

2. Identify the characteristics of the function below.

Domain _____
Range _____
Asymptote _____
X-intercept _____
Y-intercept _____

Circle one:
Increasing or Decreasing

End Behavior:
As $x \to -\infty$, $y \to$ _____
As $x \to \infty$, $y \to$ _____

5. Write an exponential equation given the table.

x	−3	−2	−1	0	1	2	3
y	⅛	¼	1	2	4	8	16	32

A. $y = 2(2)^x$
B. $y = 1(4)^x$
C. $y = 4(8)^x$
D. $y = 4(2)^x$

10. Consider the first six terms of this sequence:
6, 12, 24, 48, 96, ...
Which equation defines the sequence?
a) $g_n = 6n$
b) $g_n = 6 + g_n$
c) $g_n = 3 \cdot (2)^n$
d) $g_n = 6 \cdot (2)^{n-1}$

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Panel 5 (Feb 15-11:09 AM)

TOTD ~ Geometric Sequences   Name _____

Create your own geometric sequence. The first term in your sequence is **12,620** and your sequence is **decaying**.

12620, _____, _____, _____, ...

$a_1 = $ _____, r = _____

Write the recursive formula for YOUR sequence.	Write the explicit formula for YOUR sequence.

Find the 8th term in your sequence using the explicit formula.

TOTD ~ Geometric Sequences   Name _____

Create your own geometric sequence. The first term in your sequence is **8** and your sequence is **growing**.

8, _____, _____, _____, ...

$a_1 = $ _____, r = _____

Write the recursive formula for YOUR sequence.	Write the explicit formula for YOUR sequence.

Find the 8th term in your sequence using the explicit formula.

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Panel 6 (Feb 15-11:10 AM)

TOTD ~ Geometric Sequences   Name _____

Create your own geometric sequence. The first term in your sequence is **24330** and your sequence is **decaying**.

24330, _____, _____, _____, ...

$a_1 = $ _____, r = _____

Write the recursive formula for YOUR sequence.	Write the explicit formula for YOUR sequence.

Find the 8th term in your sequence using the explicit formula.

TOTD ~ Geometric Sequences   Name _____

Create your own geometric sequence. The first term in your sequence is **3** and your sequence is **growing**.

3, _____, _____, _____, ...

$a_1 = $ _____, r = _____

Write the recursive formula for YOUR sequence.	Write the explicit formula for YOUR sequence.

Find the 8th term in your sequence using the explicit formula.

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Algebra 1 ~ Day 4, 3/1/2018   Unit 4 Test Review   Name _____

1) Write an explicit rule and find the 6th term: 256, 64, 16, 4, …

2) Consider the sequence 2, 6, 18, 54, …
   a) Find the next 3 terms   b) Determine the recursive   c) Determine the explicit
                                      formula   formula

3) Given that a sequence is geometric, $g_{10} = 98415$, and the common ratio is 3, find g_1.

For each of the functions, identify the characteristics.
4) Graph the function $f(x) = (2)^x - 3$ 5)

Domain: _____   Domain: _____

Range: _____   Range: _____

x - intercept: _____   x - intercept: _____

y- intercept: _____   y- intercept: _____

Growth   or   Decay   Increasing   or   Decreasing

End Behavior: _____   Rate of change over [-1, 2] _____

6) Describe the transformations made to $f(x) = 3^x$ to draw the following functions.

   a) $g(x) = \frac{1}{4}3^{x-2} + 5$ b) $h(x) = -2(3)^{x+1}$

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7) Write an equation for the given description:

   Exponential that has a base of 4, stretched by 3, moved right 7, and up by 1.

8) Given the equation $y = 650(1.075)^x$
   a. Does the equation represent growth or decay?

   b. What is the growth factor?

   c. What is the rate of growth?

   d. What is the initial value?

   e. Evaluate for x=9

9) Write an explicit formula and recursive formula to model the number of dots per day.

   Day 1   Day 2   Day 3

   How many dots will there be on day 7?

10) Taylor is training for a marathon. He decides to begin by running 3 miles and increase by 1.5 miles
    each day. Write an equation to represent the scenario. How long will it take him to run 26.2 miles?

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ought a Boston Whaler in 2004 for $12,500. The boat's value depreciates by 7% a year. How
s the boat worth now? How much is it worth in 2020?

opulation of a large city increases by a rate of 3% a year. When the 2000 census was taken, the
tion was 1.2 million.

rite a model for this population growth.

at should the population be now? What is the projected population for 2020?

function represents the sequence?

3^{n-1} B. 6^{n-1}

$3(6)^{n-1}$ D. $6(3)^{n-1}$

n	1	2	3	4	5	…
a_n	6	18	54	162	486	…

function shows the function $f(x) = 3^x$ being translated 5 units to the left?

   A. $f(x) = 3^x - 5$ B. $f(x) = 3^{x+5}$ C. $f(x) = 3^{x-5}$ D. $f(x) = 3^x + 5$

ble represents an exponential function. Write the equation that represents the function.

x	0	1	2	3	4
y	3	12	48	192	768

r False: An exponential function will always have an x-intercept.

r False: An exponential function will always have a y-intercept.

graph of the following function increasing or decreasing? $F(x) = \frac{1}{2}6^x$

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19) The table below describes an exponential function.

x	0	1	2	3
y	64	32	16	8

   a) Is the function exponential growth or exponential decay?

   b) Write the equation of the function.

20) An item is purchased for $4000 and it depreciated in value %10 per year. Write an equation to
    describe the value of the item in t years.

21) Given the function $y = 3(2)^{x-1} + 4$,
    a) Does the function represent growth or decay? _____
    b) What is the equation of the asymptote? _____
    c) Describe the transformations that occur:

22) Given the function $y = 5(\frac{1}{3})^{x+2} - 3$
    a) Does the function represent growth or decay? _____
    b) What is the equation of the asymptote? _____
    c) Describe the transformations that occur:

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