

Name _____

Date _____ Pd. _____

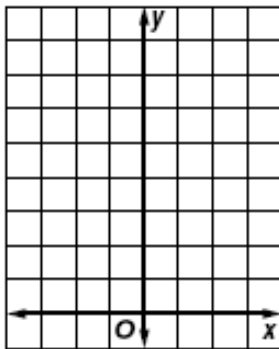
Notes: Exponential Functions

Exponential Function	
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You can use values of x to find ordered pairs that satisfy an exponential function. Then you can use the ordered pairs to graph the function.

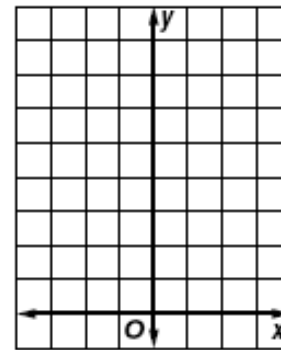
Example 1 Graph $y = 3^x$. State the y -intercept.

x	y
-2	
-1	
0	
1	
2	



Example 2 Graph $y = \left(\frac{1}{4}\right)^x$. Use the graph to determine the approximate value of $\left(\frac{1}{4}\right)^{-0.5}$.

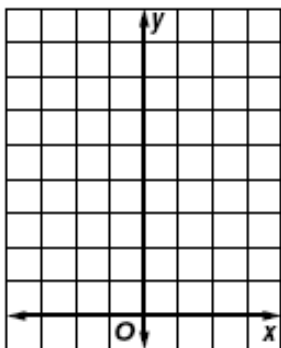
x	y
-2	
-1	
0	
1	
2	



Example Determine whether the set of data displays exponential behavior.

x	0	2	4	6	8	10
y						

Method 1: Graph the Data



Method 2: Look for a Pattern

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Exit Card: Exponential Functions

Which of the tables below represents an exponential function?

F.

x	$f(x)$
1	5
2	8
3	11
4	14
5	17

G.

x	$f(x)$
1	5
2	8
3	16
4	20
5	29

H.

x	$f(x)$
1	5
2	10
3	20
4	40
5	80

J.

x	$f(x)$
1	5
2	4
3	3
4	2
5	1

BCR

Bacteria in a culture grow exponentially. Initially there were 10 bacteria. The table below shows how many bacteria there were after t hours.

Time t	Bacteria $f(t)$
0	10
1	30
2	90
3	270

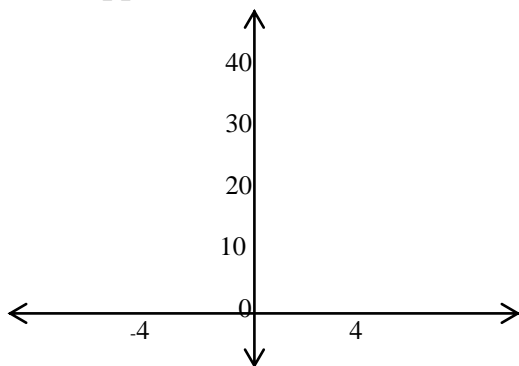
- Write an exponential function in the form $f(t) = a(b)^t$ for the number of bacteria after t hours. Explain how you determined your answer. Use words, symbols or both in your explanation.

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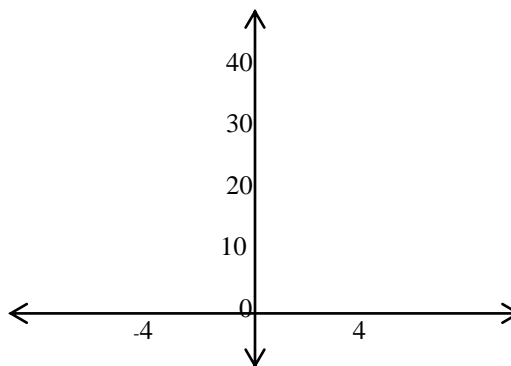
Homework: Pages 558 – 559 (13, 19, 27, 28, 33 – 35, 40, 41)

13. Graph $y = 5^x$. State the y-intercept.
Then approximate $5^{1.1}$ and check



y-intercept: _____ $5^{1.1}$: _____.

19. Graph $y = 5(2)^x$. State the y-intercept.



y-intercept: _____

27. Determine whether the data in the table displays exponential behavior. Explain.

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

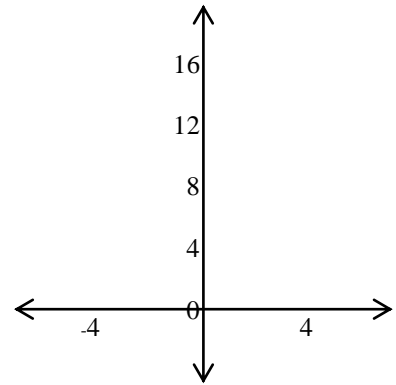
28. Determine whether the data in the table displays exponential behavior. Explain.

x	0	1	2	3
y	1	0.5	0.25	0.125

The amount of money spent at West Outlet Mall in Midtown continues to increase. The total $T(x)$ in millions of dollars can be estimated by the function $T(x) = 12(1.12)^x$, where x is the number of years after it opened in 1995.

33. According to the function, find the amount of sales for the mall in the years 2005, 2006, and 2007.

34. Graph the function and name the y-intercept.



35. What does the y-intercept represent in this problem?

A runner is training for a marathon, running a total of 20 miles per week on a regular basis. She plans to increase the distance $D(x)$ in miles according to the function $D(x) = 20(1.1)^x$, where x represents the number of weeks of training.

40. Copy and complete the table showing the number of miles she plans to run.

Week	Distance (miles)
1	
2	
3	
4	

41. The runner's goal is to work up to 50 miles per week. What is the first week that the total will be 50 miles or more?