

UNIT 3 • LINEAR AND EXPONENTIAL FUNCTIONS

Lesson 1: Graphs As Solution Sets and Function Notation

Instruction

Guided Practice 3.1.1

Example 1

Graph the solution set for the linear equation $-3x + y = -2$.

1. Solve the equation for y .

$$-3x + y = -2$$

$$y = 3x - 2$$



2. Make a table. Choose at least 3 values for x and find the corresponding values of y using the equation.

x	y
-2	-8
-1	-5
0	-2
1	1
2	4



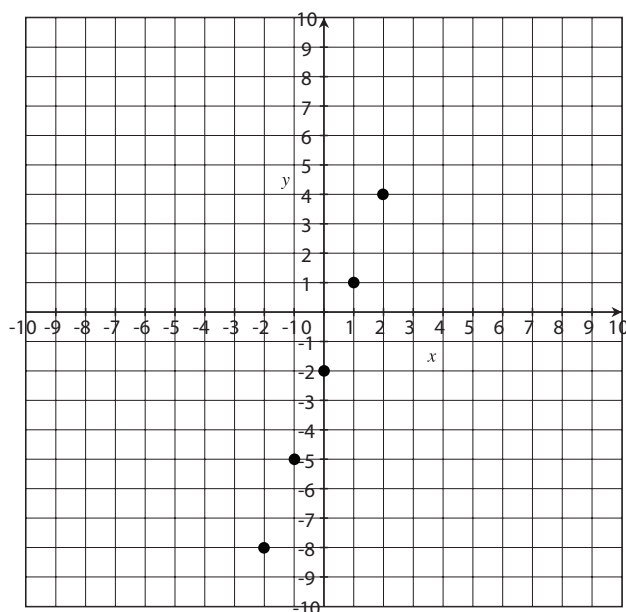
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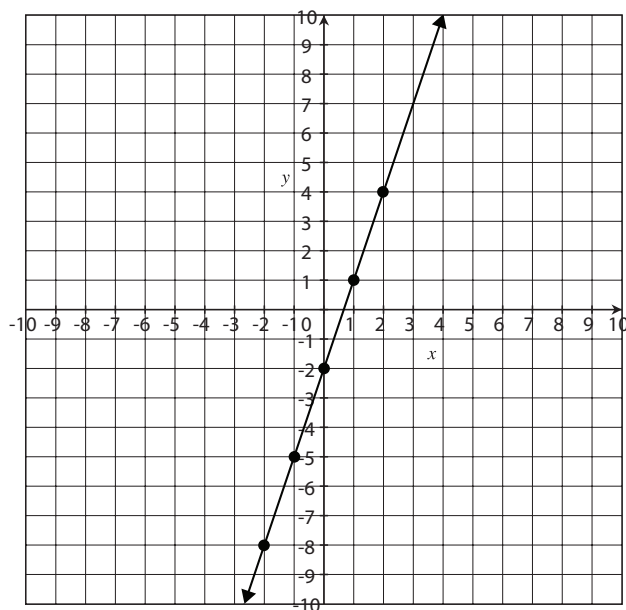
Instruction

3. Plot the ordered pairs on the coordinate plane.

Notice that the points fall in a straight line.



4. Connect the points by drawing a line through them. Use arrows at each end of the line to show that the line continues indefinitely in each direction. This represents all of the solutions for the equation.



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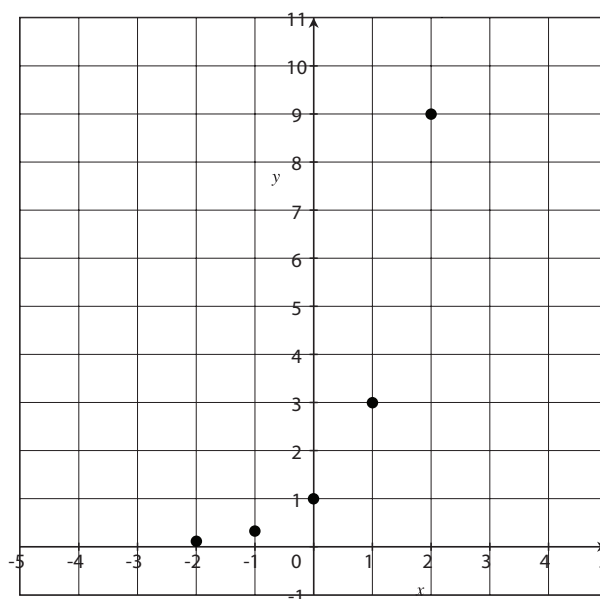
Example 2

Graph the solution set for the equation $y = 3^x$.

1. Make a table. Choose at least 3 values for x and find the corresponding values of y using the equation.

x	y
-2	$\frac{1}{9}$
-1	$\frac{1}{3}$
0	1
1	3
2	9

2. Plot the ordered pairs in the coordinate plane.

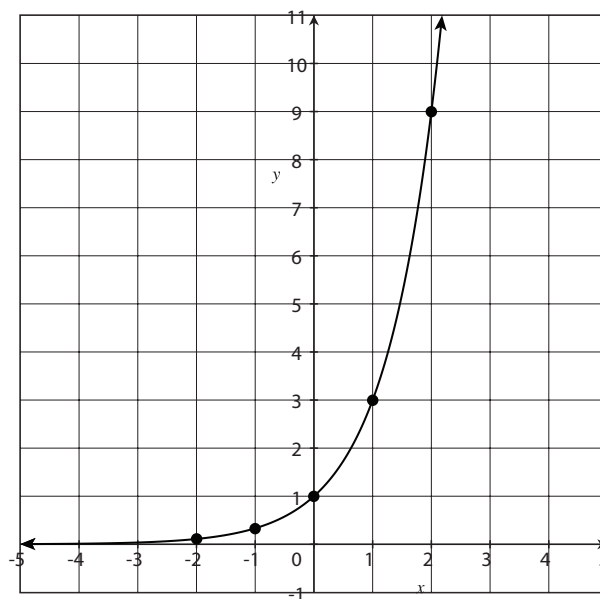


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3. Notice the points do not fall on a line. The solution set for $y = 3^x$ is an exponential curve. Connect the points by drawing a curve through them. Use arrows at each end of the line to demonstrate that the curve continues indefinitely in each direction. This represents all of the solutions for the equation.



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Example 3

The Russell family is driving 1,000 miles to the beach for vacation. They are driving at an average rate of 60 miles per hour. Write an equation that represents the distance remaining in miles and the time in hours they have been driving, until they reach the beach. They plan on stopping 4 times during the trip. Draw a graph that represents all of the possible distances and times they could stop on their drive.

1. Write an equation to represent the distance from the beach.

Let $d = 1000 - 60t$, where d is the distance remaining in miles and t is the time in hours.

2. Make a table. Choose values for t and find the corresponding values of d .

The trip begins at time 0. Let 0 = the first value of t .

The problem states that the Russells plan to stop 4 times on their trip. Choose 4 additional values for t . Let's use 2, 5, 10, and 15.

Use the equation $d = 1000 - 60t$ to find d for each value of t . Fill in the table.

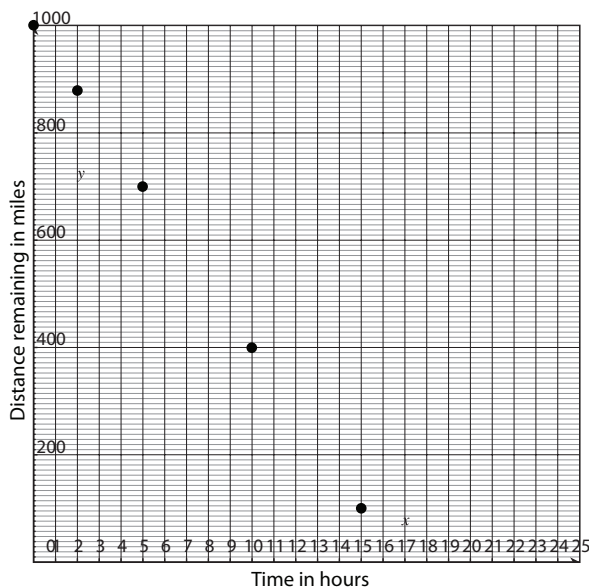
t	d
0	1000
2	880
5	700
10	400
15	100

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3. Plot the ordered pairs on a coordinate plane.



4. Connect the points by drawing a line. Do not use arrows at each end of the line because the line does not continue in each direction. This represents all of the possible stopping points in distance and time.

