

Practice and Problem Solving: A/B

Tell whether each function is linear or not.

1. $y = 3x^2$

no

2. $7 - y = 5x + 11$

yes

3. $-2(x + y) + 9 = 1$

yes

Complete the tables. Is the change constant for equal intervals?

If so, what is the change?

4. $3x + 5y = 4$

x	-1	0	1	2
y	$\frac{7}{5}$	$\frac{4}{5}$	$\frac{1}{5}$	$-\frac{2}{5}$

Constant? yes

Change? $-\frac{3}{5}$

5. $4x^2 + y = 4$

x	-1	0	1	2
y	0	4		

Constant? no

Change? n/a

6. $6x + 1 = y$

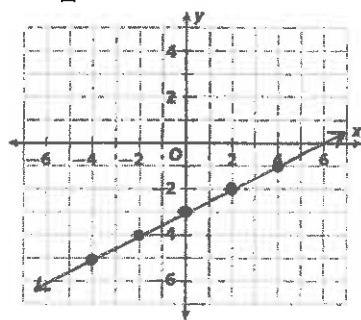
x	-1	0	1	2
y	-5	1	7	13

Constant? yes

Change? 6

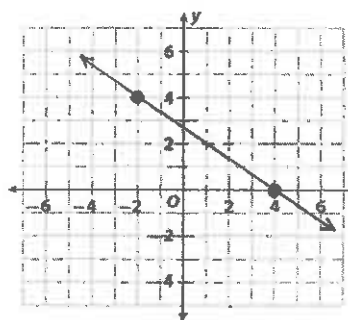
Graph each line by making a table of values.

7. $y = \frac{1}{2}x - 3$



x	y
-4	-5
-2	-4
0	-3
2	-2
4	-1

8. $2x + 3y = 8$



x	y
-2	$\frac{12}{3} = 4$
0	$\frac{8}{3} = 2$
4	$\frac{0}{3} = 0$

$2x + 3y = 8$
 $3y = -2x + 8$
 $y = -\frac{2}{3}x + \frac{8}{3}$

The solid and dashed lines show how two consultants charge for their services. Use the graph for 9–11.

9. How much does each charge for a 6-hour job?

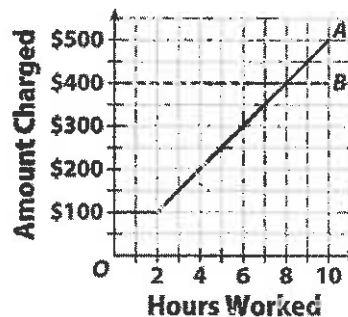
\$300 and \$400

10. Does either consultant charge according to a linear function?

yes, the dotted line is linear. $y = 400$

11. For which length of job do A and B charge the same amount?

8 hours



12. Is the function discrete or continuous? Explain. continuous (you can find any value)

Find the x- and y-intercepts of the graph of each equation.

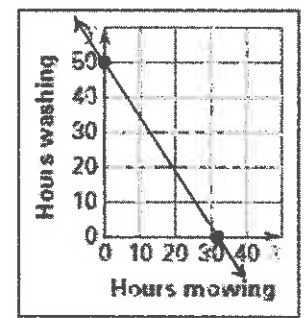
<p>1. $3x + 0.5y = 6$</p> <p>$3(0) + 0.5y = 6$ $3x + 0.5(0) = 6$</p> <p>$y = 12$ $x = 2$</p> <p>$(0, 12)$ $(2, 0)$</p>	<p>2. $4y - 6x = 48$</p> <p>$4(0) - 6x = 48$ $4y - 6(0) = 48$</p> <p>$x = -8$ $y = 12$</p> <p>$(-8, 0)$ $(0, 12)$</p>	<p>3. $y = -14x + 7$</p> <p>$0 = -14x + 7$ $y = -14(0) + 7$</p> <p>$x = \frac{1}{2}$ $y = 7$</p> <p>$(\frac{1}{2}, 0)$ $(0, 7)$</p>
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Graph each linear equation using its intercepts.

<p>4. $y = 8 + 2x$</p> <p>$0 = 8 + 2x$</p> <p>$x = -4$ $(-4, 0)$</p> <p>$y = 8 + 2(0)$</p> <p>$y = 8$ $(0, 8)$</p>	<p>5. $6y + 3x = 18$</p> <p>$6(0) + 3x = 18$</p> <p>$x = 6$ $(6, 0)$</p> <p>$6y + 3(0) = 18$</p> <p>$y = 3$ $(0, 3)$</p>
<p>6. $y = 5x - 2$</p> <p>$0 = 5x - 2$</p> <p>$x = \frac{2}{5}$ $(\frac{2}{5}, 0)$</p> <p>$y = 5(0) - 2$</p> <p>$y = -2$ $(0, -2)$</p>	<p>7. $2x - 5y = 15$</p> <p>$2(0) - 5y = 15$</p> <p>$y = -3$ $(0, -3)$</p> <p>$2x - 5(0) = 15$</p> <p>$x = \frac{15}{2}$ $(\frac{15}{2}, 0)$</p>

8. You earn \$16 an hour mowing lawns and \$10 an hour washing windows. You want to make \$500 in one week. This situation can be represented by the equation $16x + 10y = 500$.

- What do the variables x and y represent in this equation?
 x = number of hours mowing y = number of hours washing
- Find the intercepts of the graph of this equation.
 Graph the equation. $(0, 50)$ $(31\frac{1}{4}, 0)$
 $16(0) + 10y = 500$ $y = 50$ $16x + 10(0) = 500$ $x = 31\frac{1}{4}$
- What do the intercepts mean in this situation?
 If he mows 0 lawns he must spend 50 hours washing windows.
 If he washes 0 windows he must spend $31\frac{1}{4}$ hours mowing lawns.
- What are three possible numbers of hours you could work at each job?



- If you work 30 hours washing windows, how many hours do you have to mow lawns?
 $16x + 10(30) = 500$ $16x + 300 = 500$ $16x = 200$ $x = 12.5$ hours