

Things to know from Section 4.1

- Identify linear functions given the following:
 - Set of ordered pairs
 - Table of values
 - Graph
 - Equation
- Rewrite equations in standard form $Ax + By = C$
 - A and B both cannot be 0
 - A must be positive
 - $A, B,$ and C cannot be fractions
- Graph linear functions and identify domain and range

Tell whether the set of ordered pairs satisfies a linear function.

1. $\{(-3,10), (-1,9), (1,7), (3,4), (5,0)\}$
No- there is not a constant change in y .

x	-3	-1	1	3	5
y	10	9	7	4	0

2. $\{(3,4), (5,7), (7,10), (9,13), (11,16)\}$

x	3	5	7	9	11
y	4	7	10	13	16

Yes. A constant +2 change in x , +3 change in y .

3.

x	5	4	3	2	1
y	0	2	4	6	8

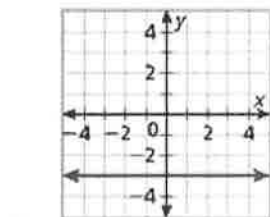
Yes. A constant -1 change in x corresponds to a +2 change in y .

4.

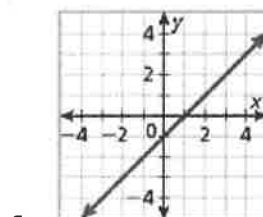
x	1	4	9	16	25
y	1	2	3	4	5

No. there is not a constant change in x .

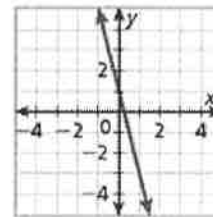
Tell whether the graph represents a function. Explain. If the graph does represent a function, is the function linear?



Yes passes VLT
Linear Function



Yes passes VLT
Linear Function



Yes passes VLT
Linear Function

Tell whether each function is linear. If so, rewrite the equation in standard form.

5. $y = 3 - 2^x$ NO

6. $3y = 12$ yes $y = 4$

7. $(y = \frac{1}{3}x - \frac{1}{2})$ yes $6y = 2x - 3$
 $2x - 6y = 3$

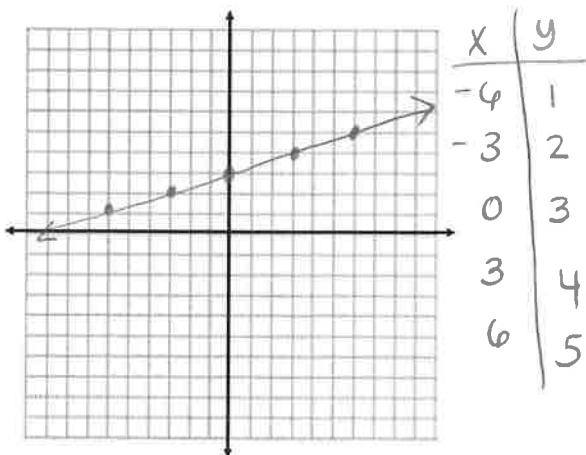
8. $2x + 3y = 5$ yes. $2x + 3y = 5$

9. $\frac{x^2 + 3}{5} = y$ NO

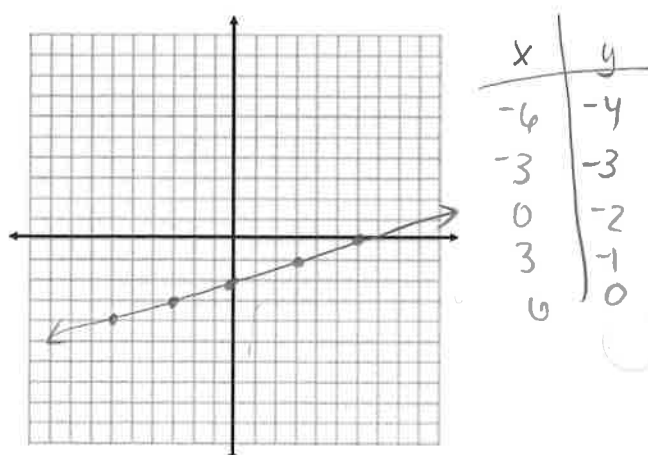
10. $\frac{x}{5} = \frac{y}{3}$ $5y = 3x$ yes $3x - 5y = 0$
 $y = \frac{3}{5}x$

Graph the function using a table of values. You may need to solve for y first.

11. $y = \frac{1}{3}x + 3$



12. $2x - 6y = 12$ $y = \frac{1}{3}x - 2$

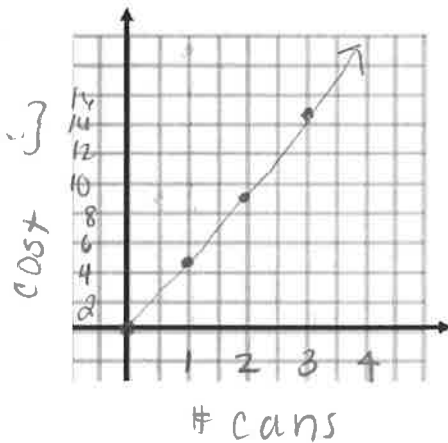


Graph the function and give its domain and range.

13. The cost of a can of iced-tea mix at SaveMore Grocery is \$4.75. The function $f(x) = 4.75x$ gives the cost of x cans of iced-tea mix.

Domain: $\{0, 1, 2, 3, \dots\}$

Range: $\{0, 4.75, 9.50, 14.25, \dots\}$



Put the given equation into standard form.

14. $2x - 3y = -12$

$$2x - 3y = -12$$

17. $y = 4x + 2$

$$4x - y = -2$$

15. $5x = 2y - 3$

$$5x - 2y = -3$$

18. $-2y = -3x + 6$

$$3x - 2y = 6$$

16. $3x - 5 + y = 2y - 4$

$$3x - y = 1$$

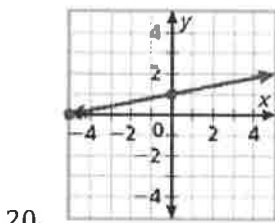
19. $y - x = 4$

$$x - y = -4$$

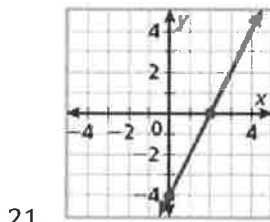
Things to know from Section 4.2

- Find the x and y intercepts given the following:
 - Graph
 - Equation
- Graph a function using intercepts
- Interpret the intercepts

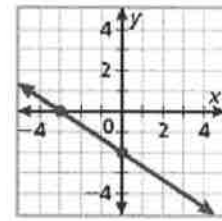
Find the x and y intercepts for the given graphs.



x-int: $(-4, 0)$
y-int: $(0, 1)$



x-int: $(2, 0)$
y-int: $(0, -4)$



22. x-int: $(-3, 0)$
y-int: $(0, -2)$

Find the x and y intercepts for the given equation.

23. $2x - 3y = -12$

25. $y = 2x + 4$

<p><u>y-int</u></p> $\frac{-3y = -12}{-3 \quad -3}$ $y = 4$ <p>$(0, 4)$</p>	<p><u>x-int</u></p> $\frac{2x = -12}{2 \quad 2}$ $x = -6$ <p>$(-6, 0)$</p>
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<p><u>x-int:</u></p> $0 = 2x + 4$ $\frac{-4 \quad -4}{-4 = 2x}$ $-2 = x$ <p>$(-2, 0)$</p>	<p><u>y-int:</u></p> $y = 4$
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24. $4x - 5y = 20$

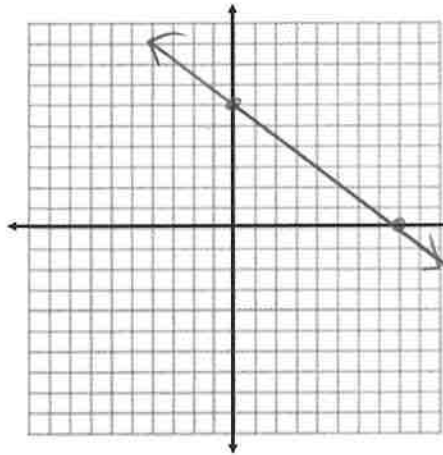
26. $\frac{1}{3}x - \frac{1}{4}y = 2$

<p><u>x-int:</u></p> $4x = 20$ $x = 5$ <p>$(5, 0)$</p>	<p><u>y-int</u></p> $-5y = 20$ $y = -4$ <p>$(0, -4)$</p>
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<p><u>x-int</u></p> $3. \quad \frac{1}{3}x = 2 \cdot 3$ $x = 6$ <p>$(6, 0)$</p>	<p><u>y-int</u></p> $-y. \quad -\frac{1}{4}y = 2 \cdot -4$ $y = -8$ <p>$(0, -8)$</p>
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Use intercepts to graph the line described by the given equation.

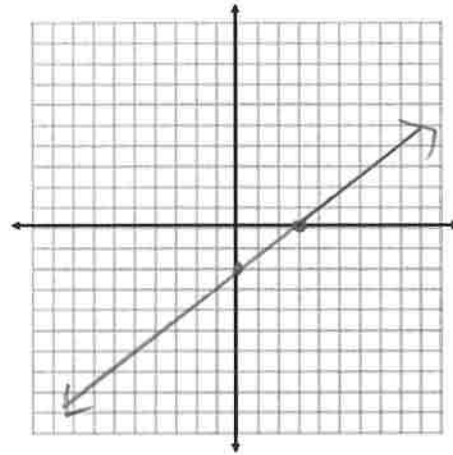
27. $\frac{1}{4}x = 2 - \frac{1}{3}y$ x-int: $\frac{1}{4}x = 2$
 $x = 8$



y-int:
 $(0 = 2 - \frac{1}{3}y)$
 $0 = 6 - y$
 $y = 6$

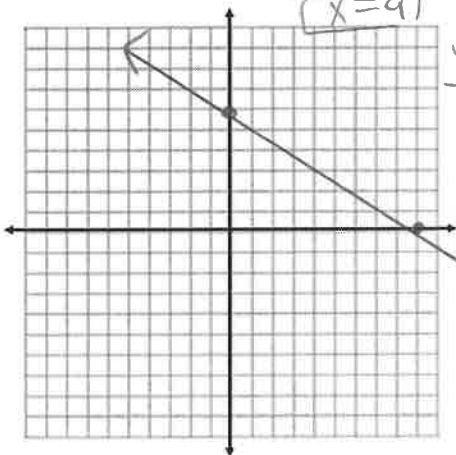
29. $4x - 6y = 12$

x-int
 $4x = 12$
 $x = 3$



y-int
 $-6y = 12$
 $y = -2$

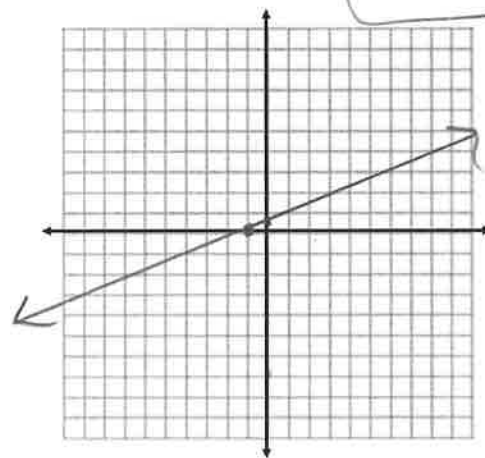
28. $2x + 3y = 18$ x-int
 $2x = 18$
 $x = 9$



y-int
 $3y = 18$
 $y = 6$

30. $x - 3y = -1$

x-int
 $x = -1$



y-int
 $-3y = -1$
 $y = \frac{1}{3}$

Graph the given function and find the intercepts. What does each intercept represent?

31. An amateur filmmaker has \$6000 to make a film that costs \$75/hour to produce. The function $f(x) = 6000 - 75x$ gives the amount of money left to make the film after x hours of production.

x-int
 $0 = 6000 - 75x$
 $75x = 6000$
 $x = 80$
 $(80, 0)$

After 80 hrs,
\$0 is left.

y-int
 $y = 6000$
 $(0, 6000)$
After 0 hrs
(at the beg.),
they have
\$6000

