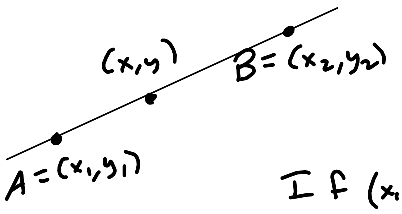
Point-Slope Form of an equation of a line



Slope between A & B is

$m = \dfrac{y_2 - y_1}{x_2 - x_1} = \dfrac{\text{change in } y}{\text{change in } x} = \dfrac{\Delta y}{\Delta x}$

If (x, y) is another point on the line, then

$\dfrac{y - y_1}{x - x_1} = \dfrac{y_2 - y_1}{x_2 - x_1}$

$y - y_1 = \left(\dfrac{y_2 - y_1}{x_2 - x_1}\right)(x - x_1)$

$y - y_1 = m(x - x_1)$ WebAssign

FOR THE FUTURE

$y = m(x - x_1) + y_1$

Best way to write eq'n of a line given a point & the slope.

$m = 3, \ (x_1, y_1) = (-2, 7) \implies$

$\boxed{y = 3(x - (-2)) + 7} = 3(x+2) + 7 = 3x + 6 + 7 = 3x + 7 = y$ webAssign might want

I'm OK w/ this

When WebAssign's asking for Point-Slope:

$y - 7 = 3(x - (-2))$

OR

$y - 7 = 3(x + 2)$

1 We find the "steepness," or slope, of a line passing through two points by dividing the difference in the [---Select---] -coordinates of these points by the difference in the [---Select---] -coordinates. So the line passing through the points (0, 2) and (5, 22) has slope [4] .

y-coords x-coords

$\frac{22-2}{5-0} = \frac{20}{5} = 4 = m$

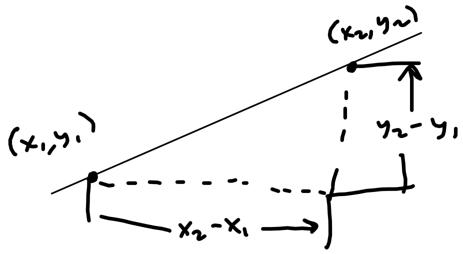
The quotient of the difference in y-values divided by the difference in x-values.

How far do you go up divided by how far you stepped to the right.

- up = down. -right = left

$\text{Slope} = m = \frac{\text{change in } y}{\text{change in } x} = \frac{\Delta y}{\Delta x}$

$= \frac{y_2 - y_1}{x_2 - x}$



Point-Slope: $y = mx + b$

m=slope

y-intercept is (0,b)

A line has the equation $y = 2x + 1$.

2 (a) This line has slope [2] .

(b) Any line parallel to this line has slope [2] .

(c) Any line perpendicular to this line has slope [$-\frac{1}{2}$]

Parallel lines: $m_2 = m_1$

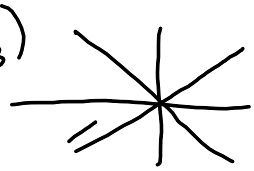
Perpendicular Lines: $m_2 = -\frac{1}{m_1}$

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

$m = -\frac{3}{2} \Rightarrow$

$m_{\perp} = -\frac{1}{-\frac{3}{2}} = \frac{-\frac{1}{1}}{-\frac{3}{2}} = \frac{-1}{1} \cdot \left(-\frac{2}{3}\right)$

$= \frac{2}{3}$



$1 = \frac{-1}{-1}$

3 The point-slope form of the equation of the line with slope 5 passing through the point (2, 4) is

Point-Slope Video

$y - y_1 = m(x - x_1)$

$y - 4 = 5(x-2)$ WebAssign

$y = 5(x-2)+4$ My Way

4 For the linear equation $4x + 3y - 24 = 0$, the x-intercept is (6,0) and the y-intercept is (0,8). The equation in slope-intercept form is $y =$ ______. The slope of the graph of this equation is ______.

$Ax+By+C=0$ General Form

A,B,C,D constant numbers are Real

Real coefficients

STANDARD FORM $Ax+By=D$

$4x+3y-24=0$

$4x+3y=24$

x	y
0	8
6	0

$3y=24 \rightarrow y=\frac{24}{3}=8$

$4x=24 \rightarrow x=6$

$m = -\frac{A}{B} = -\frac{4}{3}$. OLD-SCHOOL

$4x+3y=24$

$3y=-4x+24$

$y=-\frac{4}{3}x+\frac{24}{3} = \boxed{-\frac{4}{3}x+8=y}$

Slope-Intercept

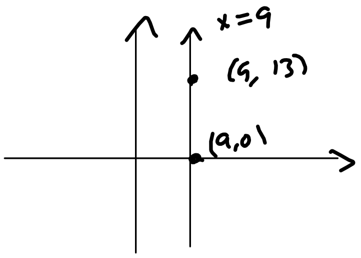
5 The slope of a horizontal line is ---Select--- 0 . The equation of the horizontal line passing through (2, 7)

$y=7$

6 The slope of a vertical line is ---Select--- undefined . The equation of the vertical line passing through (9, 7) is

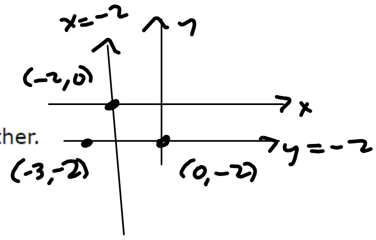
$x=9$

(9,0) , (9,13)



$m = \frac{13-0}{9-9} = \frac{13}{0}$ $\underbrace{\text{Not Real}}_{\notin \mathbb{R}}$

Yes or *No*? If *No*, give a reason.



7 (a) Is the graph of $y = -2$ a horizontal line?

- ○ Yes
- ○ No, the graph of $y = -2$ could be horizontal, vertical, or neither.
- ○ No, the graph of $y = -2$ is a line with a negative slope.
- ○ No, the graph of $y = -2$ is a line with a positive slope.
- ○ No, the graph of $y = -2$ is a vertical line.

(b) Is the graph of $x = -2$ a vertical line?

- ○ Yes
- ○ No, the graph of $x = -2$ is a line with a negative slope.
- ○ No, the graph of $x = -2$ is a horizontal line.
- ○ No, the graph of $x = -2$ could be horizontal, vertical, or neither.
- ○ No, the graph of $x = -2$ is a line with a positive slope.

(c) Does a line perpendicular to a horizontal line have slope 0?

- ○ Yes
- ○ No, a line perpendicular to a horizontal line will have a positive slope.
- ○ No, a line perpendicular to a horizontal line could be horizontal, vertical, or neither.
- ○ No, a line perpendicular to a horizontal line will have an undefined slope.
- ○ No, a line perpendicular to a horizontal line will have a negative slope.

$m=0 \Rightarrow m_\perp = \frac{-1}{0}$ undefined

The slope $m_\perp$ of the perpendicular line is $m_\perp = -\frac{1}{m}$, when m is the original slope.

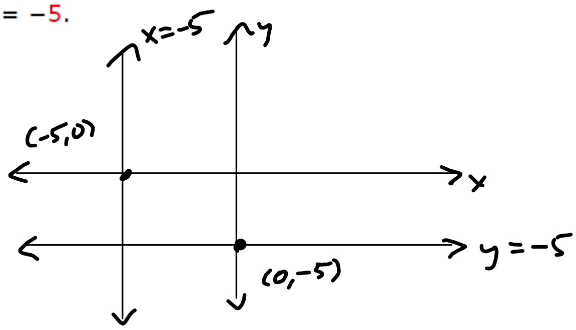
(d) Does a line perpendicular to a vertical line have slope 0?

- ○ Yes
- ○ No, a line perpendicular to a vertical line will have an undefined slope.
- ○ No, a line perpendicular to a vertical line could be horizontal, vertical, or neither.
- ○ No, a line perpendicular to a vertical line will have a negative slope.
- ○ No, a line perpendicular to a vertical line will have a positive slope.

8 Sketch a graph of the lines $y = -5$ and $x = -5$.

Are the lines perpendicular?

Yes



Find the slope of the line through P and Q.

9 $P(-2, 8)$, $Q(0, 0)$

(x_1, y_1), (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0 - 8}{0 - (-2)} = \frac{-8}{2} = \boxed{-4 = m}$$

Find the slope of the line through P and Q.

10 $P(0, 0)$, $Q(3, -2)$

(x_1, y_1), (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-2 - 0}{3 - 0} = \boxed{\frac{-2}{3} = m}$$

Write Much.

Think Little, Grahsshoppah.

Find the slope of the line through P and Q.

11 $P(-4, 1)$, $Q(5, -3)$

(x_1, y_1), (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 1}{5 + 4} = \boxed{\frac{-4}{9} = m}$$

Find the slope of the line through P and Q.

12 $P(2, -5)$, $Q(3, -5)$

(x_1, y_1), (x_2, y_2)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - (-5)}{3 - 2} = \frac{0}{1} = \boxed{0 = m}$$

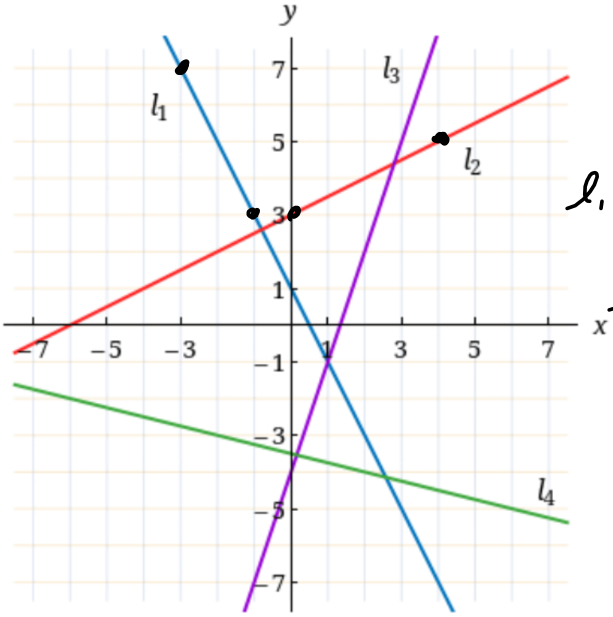
Should've observed

$y_1 = y_2$

Find the slopes of the lines l_1, l_2, l_3, and l_4 in the figure below.

13

13



Look for integer-valued coordinates to beat the system.

$m = \frac{y_2 - y_1}{x_2 - x_1}$

l_1 : $(-3,7), (-1,3)$

$m = \frac{3-7}{-1+3} = \frac{-4}{2} = \boxed{-2 = m}$

l_2 $(0,3), (4,5)$

$m = \frac{2}{4} = \frac{1}{2}$

$m = \frac{5-3}{4-0} = \frac{2}{4} = \boxed{\frac{1}{2} = m}$

line l_1

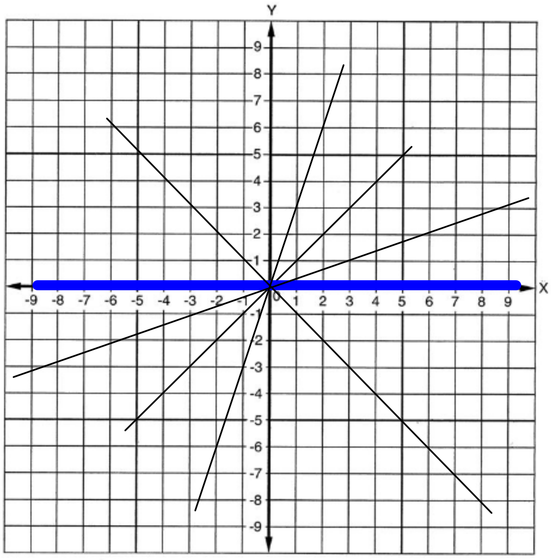
line l_2

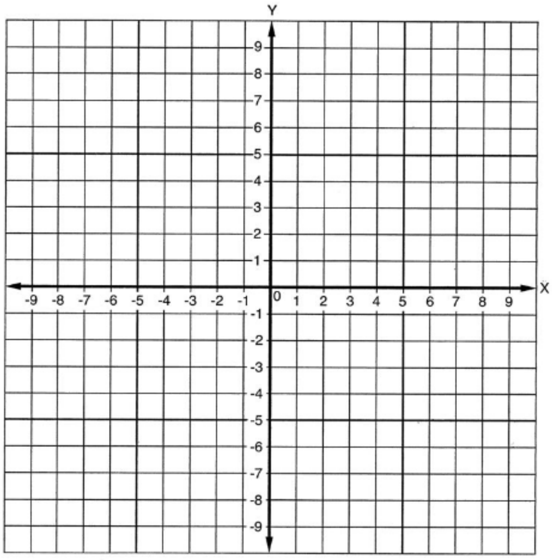
line l_3

line l_4

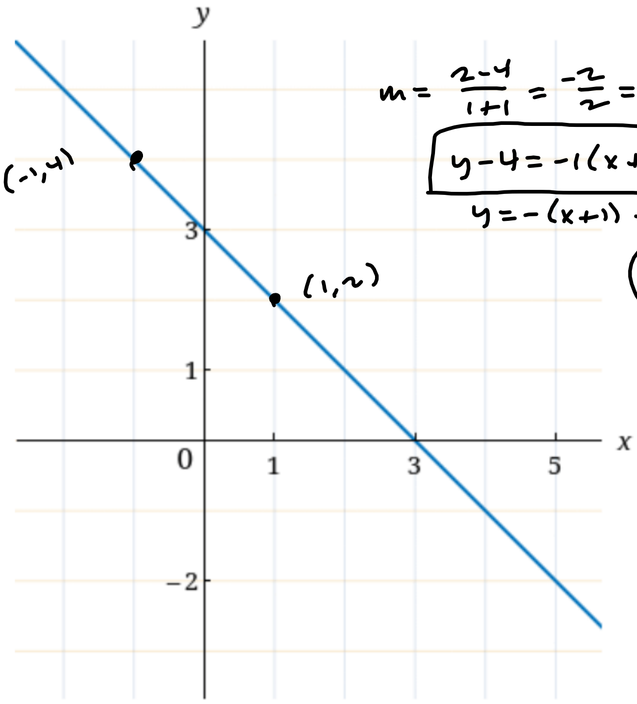
14 (a) Sketch lines through (0, 0) with slopes 1, 0, $\frac{1}{3}$, 3, and −1.

(b) Sketch lines through (0, 0) with slopes $\frac{1}{5}$, $\frac{1}{2}$, $-\frac{1}{5}$, and 5.





15 Find an equation for the line whose graph is sketched.



$m = \frac{2-4}{1+1} = \frac{-2}{2} = -1$ WebAssign took it!

$\boxed{y-4=-1(x+1)}$ Book way (WebAssign!)

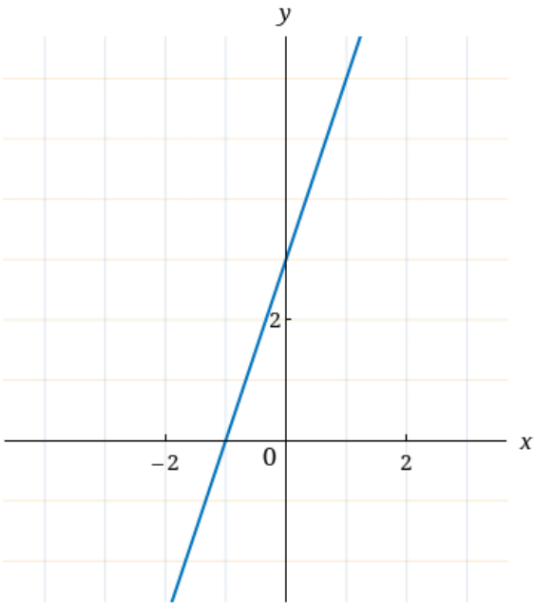
$y = -(x+1)+4 = -x-1+4$

$\boxed{y = -x+3}$

I bet it'd also take this.

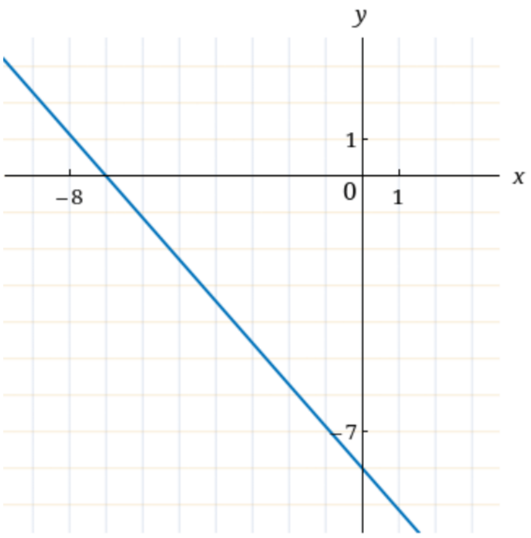
Find an equation for the line whose graph is sketched.

16



Find an equation for the line whose graph is sketched.

17



Find an equation of the line that satisfies the given conditions.

18 Slope 4; y-intercept −9 → $(0,-9)$ Nice!

$y=4x-9$ ROTE Slope-Intercept.

$y=4(x-0)-9 = 4x-9$ Point-Slope (MACHINE)

Legit.

Find an equation of the line that satisfies the given conditions.

19

Slope $\frac{5}{6}$; y-intercept 5 $y=\frac{5}{6}x+5$

20 Find an equation of the line that satisfies the given conditions.

Through (3, 3); slope 4

My way: $y = m(x - x_1) + y_1$

$y = 4(x-3) + 3$ WebAssign doesn't like it!

$y - 3 = 4(x-3)$ Testing! Newp

$y = 4x - 12 + 3 \rightarrow \boxed{4x - 9 = y}$ webAssign Likes This form

$y = 4x - 9$ is also OK.

21 Find an equation of the line that satisfies the given conditions.

Through (−3, 6); slope −1

22 Find an equation of the line that satisfies the given conditions.

Through (5, 8); slope $\frac{2}{3}$

23 Find an equation of the line that satisfies the given conditions.

Through (9, 2) and (8, 9)

(x_1, y_1) (x_2, y_2)

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{9-2}{8-9} = \frac{7}{-1} = -7$

$y = m(x - x_1) + y_1$

$= -7(x-9) + 2$ webAssign OK with this!

$= -7x + 63 + 2 = -7x + 65 = y$

24 Find an equation of the line that satisfies the given conditions.

Through (−5, 2) and (−4, −3)

25 Find an equation of the line that satisfies the given conditions.

Through (4, 6) and (7, 6)

26 Find an equation of the line that satisfies the given conditions.

Through (5, 9); slope 0

$y=9$

Horizontal

#s 26-7

Horizontal and Vertical lines are degenerate cases.

27 Find an equation of the line that satisfies the given conditions.

Through (5, −6); slope undefined

$x=5$ vertical

28 Find an equation of the line that satisfies the given conditions.

Through (−2, 4); perpendicular to the line $y = -\frac{1}{3}x + 3$

$m = -\frac{1}{3} \Rightarrow m_{\perp} = 3$

$y = 3(x+2)+4$

29 Find an equation of the line that satisfies the given conditions.

Through (9, 2); parallel to the y-axis

$\to m=0$

$\boxed{y=2}$

30 Find an equation of the line that satisfies the given conditions.

Through (2, 5); parallel to the x-axis

$\to$ vertical

$\boxed{x=2}$

31

Hi, Mr.Mills!

I'm confused how y=4x+5y-32 isn't correct for this equation. The y-intercept is 8 and its parallel to the given line. What should I do differently?

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Find an equation of the line that satisfies the given conditions.

y-intercept 8; parallel to the line $4x + 5y + 5 = 0$

$y = 4x + 5y - 32$ ✗ $\boxed{y = 8 - \frac{4x}{5}}$

$Ax+By=C$ STANDARD FORM

$Ax+By+C=0$ GENERAL ..

$m = -\frac{A}{B}$

$4x+5y+5=0$

$5y = -4x-5$

$y = \frac{-4x-5}{5}$

$= \frac{-4x}{5} - \frac{5}{1}$

$= -\frac{4}{5}x - 5$

$m = -\frac{4}{5}$ Slope-Int Form of Line.

$m = -\frac{4}{5}$, $b = 8$

when they hand you the y-intercept,

$y = -\frac{4}{5}x + 8$ is instant.

But that's not the general method

The general method is POINT-SLOPE FORM

$y - y_1 = m(x - x_1)$ $(x_1, y_1) = (0, 8)$

$m = -\frac{4}{5}$

$\boxed{y - 8 = -\frac{4}{5}(x-0)} = -\frac{4}{5}x$

$y = -\frac{4}{5}x + 8$

MY POINT-SLOPE:

$y = m(x - x_1) + y_1$ Calculus Foolproof

No equation to solve for b.

$(3,2)$ $m=7$

$y = 7(x-3)+2 = 7x - 21 + 2 = \boxed{7x - 19 = y}$

$y = m(x-x_1)+y_1$

32 Find an equation of the line that satisfies the given conditions.

Through $\left(\frac{1}{2}, -\frac{2}{7}\right)$; perpendicular to the line $3x - 6y = 1$

$m = -\frac{A}{B} = \frac{-3}{-6} = \frac{1}{2}$

$\Rightarrow m_{\perp} = -2$

$y = -2(x - \frac{1}{2}) - \frac{2}{7}$

$y = m(x - x_1) + y_1$

$-6y = -3x + 1$

$y = \frac{-3}{-6}x + \frac{1}{-6}$

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

$m = \frac{1}{2}$

33 Find the slope and y-intercept of the line. (If an answer does not exist, enter DNE.)

$7x + 8y = 16$

$m = -\frac{A}{B} = -\frac{7}{8}$

×

slope $-7/8$

y-intercept $(x, y) = (0, 2)$

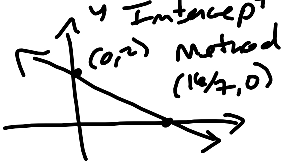
x	y
0	2

From $8y = 16$

Draw its graph.

x	y
0	2
$\frac{16}{7}$	0

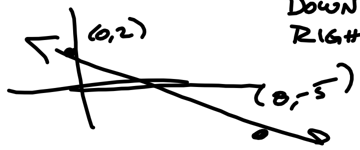
y Intercept Method



Slope-Intercept Method

$m = -\frac{7}{8}$

Down 7
Right 8



Using slope from (0,2). $(0,2) \rightsquigarrow (0+8, 2-7)$
$= (8, -5)$

34 Find the slope and y-intercept of the line. (If an answer does not exist, enter DNE.)

$4x - 5y = 20$

slope

y-intercept $(x, y) = (\quad)$

Draw its graph.

It's stupid to use the slope and y-intercept, when given an equation in Standard Form, because it's all set up to get both intercepts, instantly.

Find the slope and y-intercept of the line. (If an answer does not exist, enter DNE.)

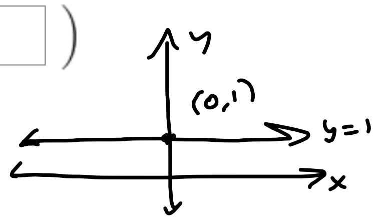
35

$y = 1$

slope $\boxed{0}$

y-intercept $(x, y) = (\boxed{0, 1})$

Draw its graph.



36 Find the slope and y-intercept of the line. (If an answer does not exist, enter DNE.)

$x = -6$

slope $\boxed{\text{DNE}}$

y-intercept $(x, y) = (\boxed{\text{DNE}})$

Draw its graph.

37 Find the slope and y-intercept of the line. (If an answer does not exist, enter DNE.)

$y = -7$

slope $\boxed{0}$

y-intercept $(x, y) = (\boxed{0, -7})$

Draw its graph.

Find the x- and y-intercepts of the line.

38

$7x - 5y - 35 = 0$ General form

Standard form is better!

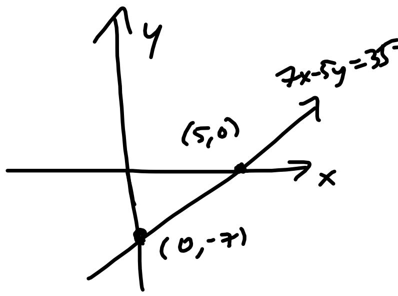
$Ax + By = C$

$7x - 5y = 35$

x-intercept $(x, y) = (\boxed{5, 0})$

y-intercept $(x, y) = (\boxed{0, -7})$

Draw its graph.



x	y
0	-7
5	0

Find the x- and y-intercepts of the line.

39 $\frac{1}{4}x - \frac{1}{3}y - 2 = 0$ Genl $\Longrightarrow$ Times 12

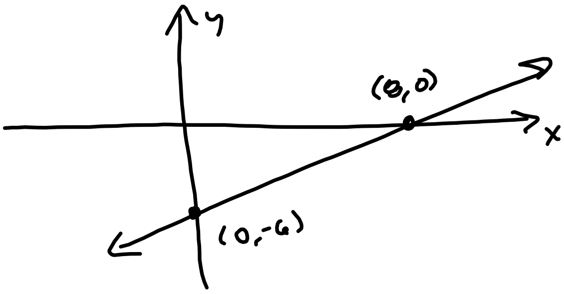
$3x - 4y = 24$ Stdd

x	y
0	−6
8	0

x-intercept $(x, y) = ($ 8,0 $)$

y-intercept $(x, y) = ($ 0,−6 $)$

Draw its graph.



Find the x- and y-intercepts of the line.

40 $y = 6x + 2$

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

$6x+2=0 \Longrightarrow$

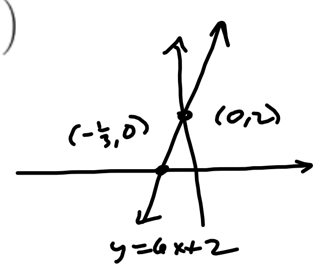
$6x=-2$

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

x-intercept $(x, y) = ($ $-\frac{1}{3}, 0$ $)$

y-intercept $(x, y) = ($ 0,2 $)$

Draw its graph.



Find the x- and y-intercepts of the line.

41 $y = -4x - 14$

x-intercept $(x, y) = (\quad)$

y-intercept $(x, y) = (\quad)$

Draw its graph.

The equations of two lines are given. Determine whether the lines are parallel, perpendicular, or neither.

42 $y = 5x + 7$, $5y - 25x - 8 = 0$ $\longrightarrow$ $-25x + 5y = 8$

$m = 5$

$m = \frac{-25}{5} = +5$

$-\left(\frac{-25}{5}\right) = 5$

- ○ parallel
- ○ perpendicular
- ○ neither

43 The equations of two lines are given. Determine whether the lines are parallel, perpendicular, or neither.

$y = \frac{1}{3}x + 4$; $3x + 9y = 3$

$m = \frac{1}{3}$ $m = -\frac{3}{9} = -\frac{1}{3}$

○ parallel

○ perpendicular

○ neither

The equations of two lines are given. Determine whether the lines are parallel, perpendicular, or neither.

44 $5x - 3y = 5$; $12y + 20x = 9$

$-\frac{A}{B} = -\frac{5}{-3} = \frac{5}{3}$ $-\frac{A}{B} = -\frac{20}{12} = -\frac{5}{3}$

○ parallel

○ perpendicular

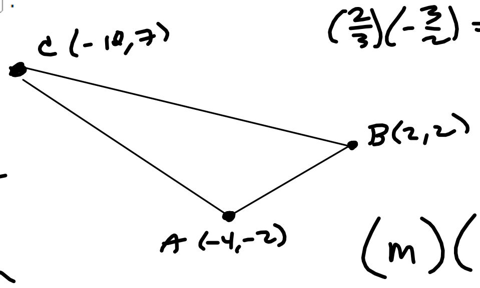
○ neither

Verify the given geometric property.

45 Use slopes to show that $A(-4, -2)$, $B(2, 2)$, and $C(-10, 7)$ are vertices of a right triangle.

We first plot the points to determine the sides. Next find the slopes of the three sides. We find that the slope of AB is ______, the slope of AC is ______, and the slope of BC is ______. Two lines are perpendicular to one another when the product of their slopes is equal to ______. Thus, we see that ---Select--- are perpendicular sides, and ABC ---Select--- .

m of $\overline{AB}$ $\frac{2+2}{2+4} = \frac{4}{6} = \frac{2}{3}$



$\left(\frac{2}{3}\right)\left(-\frac{3}{2}\right) = -1$

m of $\overline{AC}$ $\frac{-2-7}{-4+10} = \frac{-9}{6} = -\frac{3}{2}$

$(m)(m_\perp) = -1$

m of $\overline{BC}$ Blah Blah Blah

Verify the given geometric property.

46 Use slopes to determine whether the given points are collinear (lie on a line).

(a) (2, 13), (4, 21), (9, 41)

A B C

○ Yes, the points are collinear.

○ No, the points are not collinear.

$\overline{AB}$: $\frac{21-13}{4-2} = \frac{8}{2} = 4$

$\overline{AC}$: $\frac{41-13}{9-2} = \frac{28}{7} = 4$ Yes

$\overline{BC}$: $\frac{41-21}{9-4} = \frac{20}{5} = 4$ See?

(b) (−2, −5), (2, 14), (6, 37)

○ Yes, the points are collinear.

○ No, the points are not collinear.

47 (a) Show that if the x- and y-intercepts of a line are nonzero numbers a and b, then the equation of the line can be written in the form $\frac{x}{a} + \frac{y}{b} = 1$. This is called the **two-intercept form** of the equation of a line.

We start with the two points $(a, 0)$ and $(0, b)$. The slope of the line that contains them is $\boxed{-\frac{b}{a}}$. So, using the slope-intercept form, the equation of the line containing them is $y = \boxed{-\frac{b}{a}x + b}$. Dividing by b ($b \neq 0$) gives $\frac{y}{b} = \boxed{-\frac{x}{a}}$ + 1, which can be rewritten as $\boxed{\frac{x}{a}}$ + $\frac{y}{b}$ = 1. Thus, the equation of the line can be written in the two-intercept form of the equation of a line.

(b) Use part (a) to find an equation of the line whose x-intercept is 5 and whose y-intercept is −3.

$\frac{x}{5} - \frac{y}{3} = 1$

$m = \frac{b-0}{0-a} = -\frac{b}{a}$

$y = -\frac{b}{a}(x-a)+0 = -\frac{b}{a}x + \left(\frac{b}{a}\right)(a)$

$y = -\frac{b}{a}x + b$ Times a

$ay = bx + ba$ $\div ba$

$\frac{y}{b} = -\frac{x}{a} + 1$

$+\frac{x}{a} + \frac{y}{b} = 1$

$y = -\frac{b}{a}(x-0) + b$

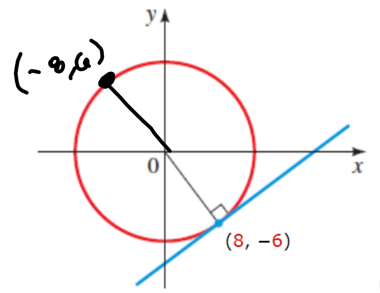
$\left(y = -\frac{bx}{a} + b\right) \div b$

$\frac{y}{b} = -\frac{x}{a} + 1$ ⟶

$\frac{x}{a} + \frac{y}{b} = 1$

48

(a) Find an equation for the line tangent to the circle $x^2 + y^2 = 100$ at the point $(8, -6)$. (See the figure.)



FACT: The radius of the circle is perpendicular to a tangent line to the circle, where it meets the boundary.

$m = \frac{-6-0}{8-0} = \frac{-6}{8} = -\frac{3}{4}$ is slope of the radius.

$m_{\perp} = \frac{4}{3}$

$\therefore$ Eq'n of Tangent Line is

$y = \frac{4}{3}(x-8) - 6$

(b) At what other point on the circle will a tangent line be parallel to the tangent line in part (a)?

$(x, y) = ($ -8,6 $)$

49

If the recommended adult dosage for a drug is D (in mg), then to determine the appropriate dosage c for a child of age a, pharmacists use the equation $c = 0.0417D(a + 1)$. Suppose the dosage for an adult is 300 mg.

a = age of child (years)

c = Appropriate dosage as a function of a (mg)

(a) Find the slope.

.0417D → NO

D = 300, so

m = 300(.0417)

$\boxed{12.51 \frac{mg}{yr}}$

What does it represent?

- the maximum dosage for an adult
- the difference between an adult's dosage and a newborn's dosage
- the maximum difference between an adult's dosage and a newborn's dosage
- the increase in dosage for each one-year increase in the child's age
- the increase in dosage for each one-month increase in the child's age → NO

.0417 × 300 = 12.5100

(b) What is the dosage (in mg) for a newborn?

12.51 mg

The manager of a flea market knows from past experience that if she charges x dollars for a rental space at the flea market, then the number y of spaces she can rent is given by the equation $y = 150 - 5x$.

50

(a) Sketch a graph of this linear equation. (Remember that the rental charge per space and the number of spaces rented must both be nonnegative quantities.)

Let y = # of spaces rented @ Flea MKT as a function of

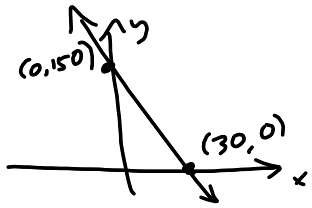
x = what she charges per space ($)

= # of dollars per space

$y = 150 - 5x$

$5x = 150$

$x = 30$



(b) What does the slope of the graph represent?

- ○ the change in cost for each rented space
- ○ the cost per space when the manager rents no spaces
- ○ the decline in number of spaces sold for each $1 increase in rent
- ○ the increase in the number of spaces sold for each $1 increase in rent
- ○ the number of spaces at the flea market

What does the y-intercept of the graph represent?

- ○ the change in cost for each rented space
- ○ the cost per space when the manager rents no spaces
- ○ the decline in number of spaces sold for each $1 increase in rent
- ○ the increase in the number of spaces sold for each $1 increase in rent
- ○ the number of spaces at the flea market

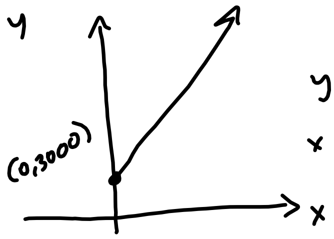
What does the x-intercept of the graph represent?

- ○ the change in cost for each rented space
- ○ the cost per space when the manager rents no spaces
- ○ the decline in number of spaces sold for each $1 increase in rent
- ○ the increase in the number of spaces sold for each $1 increase in rent
- ○ the number of spaces at the flea market

51

A small-appliance manufacturer finds that if he produces x toaster ovens in a month, his production cost is given by the equation $y = 7x + 3000$ where y is measured in dollars.

(a) Sketch a graph of this linear equation.



y = # of dollars as func. of
x = # of toaster ovens produced in a month

(b) What does the slope of the graph represent?

- ○ the fixed cost of a toaster oven
- ○ how much a toaster oven cost last month
- ○ how much a toaster oven will cost next month
- ○ the cost per toaster oven
- ○ the monthly fixed cost

What does the y-intercept of the graph represent?

- ○ the fixed cost of a toaster oven
- ○ how much a toaster oven cost last month
- ○ how much a toaster oven will cost next month
- ○ the cost per toaster oven
- ○ the monthly fixed cost

A small business buys a computer for \$2,800. After 4 years the value of the computer is expected to be \$200. For accounting purposes the business uses *linear depreciation* to assess the value of the computer at a given time. This means that if V is the value of the computer at time t, then a linear equation is used to relate V and t.

52

(a) Find a linear equation that relates V (in dollars) and t (in yr).

(b) Sketch a graph of this linear equation.

Let V = the value of the computer (in \$) as a function of

t = time (in years) from date of purchase.

Bought it for \$2800 ⇝ (0, 2800)

In 4 yrs, it's worth \$200 ⇝ (4, 200)

$$m = \frac{200-2800}{4-0} = \frac{-2600}{4} = \frac{-1300}{2} = -650 \ \text{\$/yr}$$

$V = -650t + 2800$ (Handed us the y-intercept)

(c) What does the slope of the graph represent?

- ○ the initial value of the computer
- ○ the value of the computer after 4 years
- ○ the value of the computer after 1 year
- ○ how much the computer has depreciated after 1 year
- ○ the rate of depreciation of the computer

What does the V-intercept of the graph represent?

- ○ the initial value of the computer
- ○ the value of the computer after 4 years
- ○ the value of the computer after 1 year
- ○ how much the computer has depreciated after 1 year
- ○ the rate of depreciation of the computer

(d) Find the depreciated value of the computer (in dollars) 3 years from the date of purchase.

$V\big|_{t=3} = V(3) \doteq$ "V of 3" $\doteq$ "V evaluated @ t=3"

$= -650(3) + 2800 = -1950 + 2800 = 850$