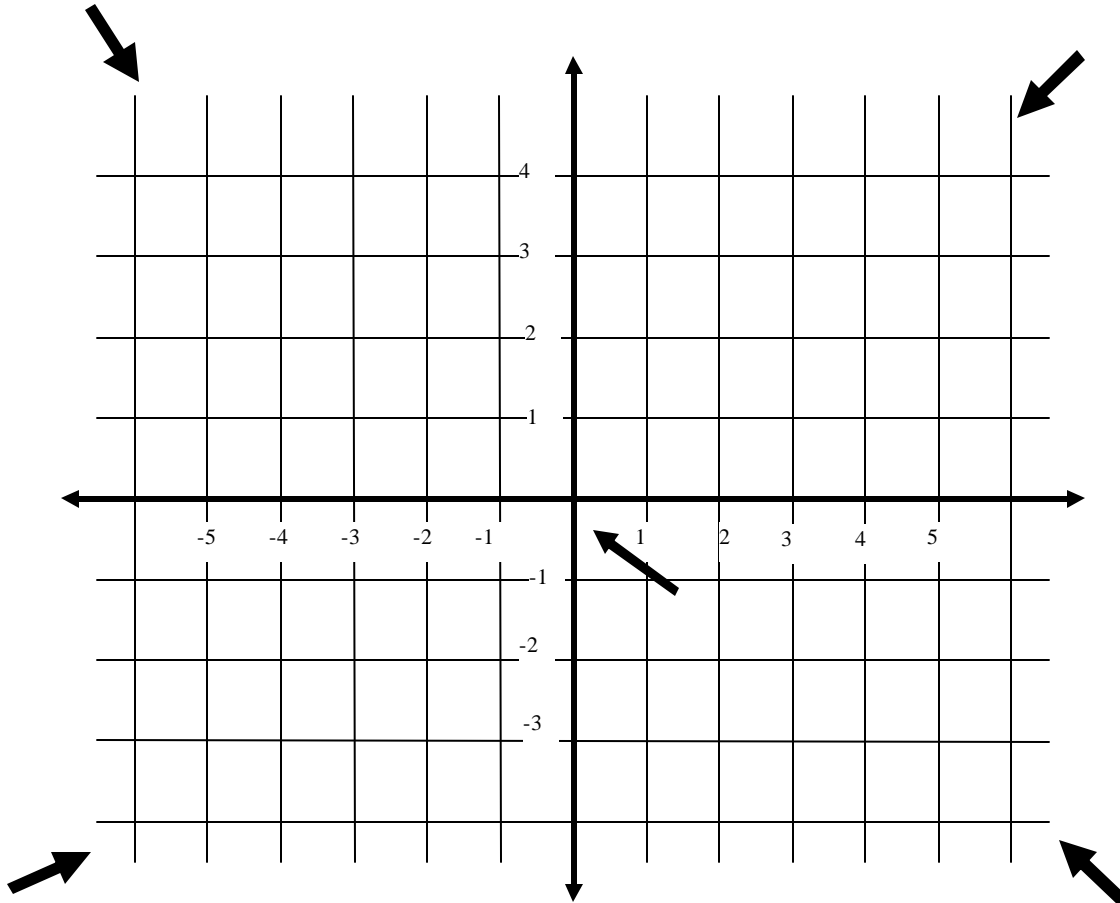


The Rectangular Coordinate System (8.3)



rectangular coordinate system:

x-axis:

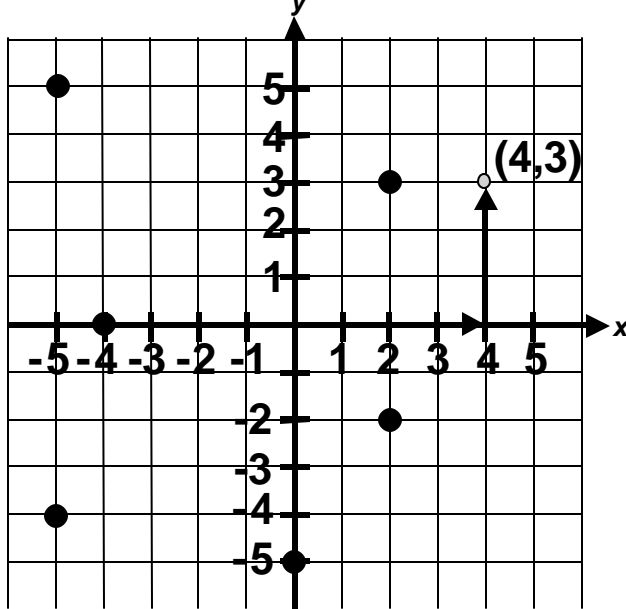
y-axis:

origin:

Every point in the rectangular coordinate system corresponds to an **ordered pair of numbers**.

$$(x, y)$$

Plotting Points

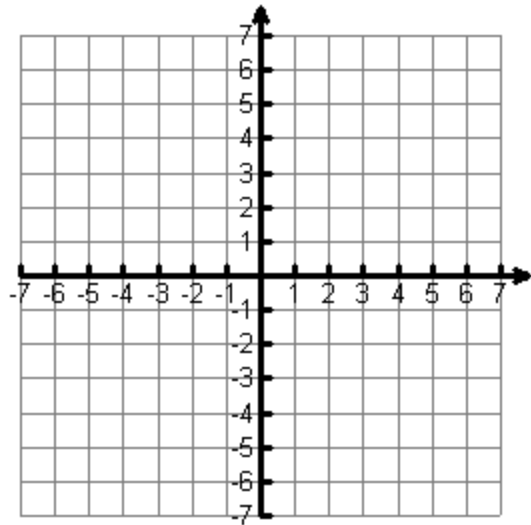


In general, to plot the ordered pair (x,y) , start at the origin. Next,

move x units left or right and then move y units up or down.

right if x is positive,
left if x is negative

up if y is positive,
down if y is negative



Helpful Hints:

1. Since the first number, or x -coordinate, of an ordered pair is associated with the x -axis, it tells how many units to move left or right. Similarly, the second number, or y -coordinate, tells how many units to move up or down.
2. Remember that each point in the rectangular coordinate system corresponds to exactly one ordered pair and that each ordered pair corresponds to exactly one point.

What can we say about the sign of the coordinates in Quadrant I? Quadrant II? Quadrant III? Quadrant IV?

Graph each ordered pair on the axes at the right. Label each ordered pair with its letter.

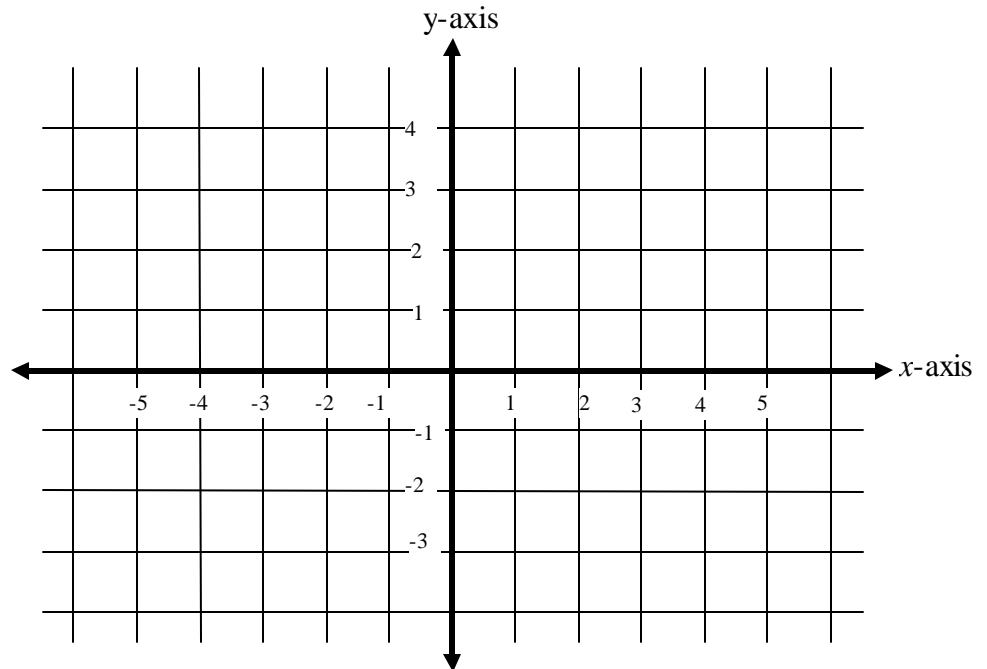
A (4, 0)

B (-3, -5)

C (0, 4)

D (6, -2)

E (-4, 3)



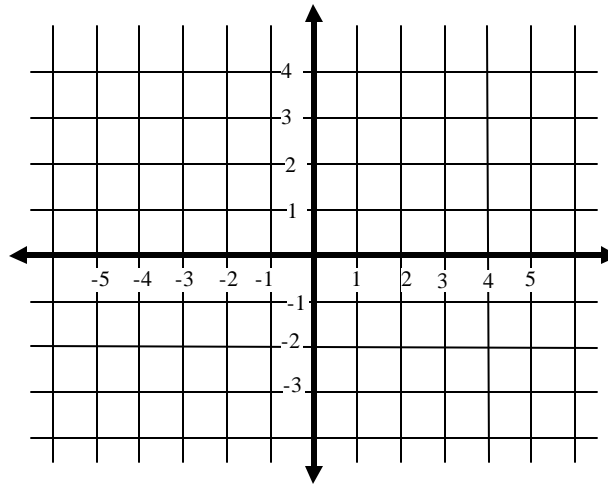
If a and b are both positive numbers, answer the following questions *true* or *false*. If the answer is *false*, write a related statement that is true.

1. (a, b) lies in quadrant I.
2. $(-a, -b)$ lies in quadrant IV.
3. $(-a, 0)$ lies on the y-axis.
4. $(a, -b)$ lies in quadrant IV.
5. $(-a, b)$ lies in quadrant II.
6. $(0, b)$ lie on the y-axis

Determining Whether an Ordered Pair is a Solution (8.3)

Plot some of the ordered pair solutions to the equation $x + y = 5$.

x	y	Ordered Pairs



How many solutions are there?

What figure is used to represent the solutions?

Now you try the exercises on pages 566 – 567 # 20, 26, and 34

Graphing Linear Equations (8.4)

Linear Equation in Two Variables

A linear equation in two variables is an equation that can be written in the form

$$ax + by = c$$

where a , b , and c are numbers, and a and b are not both 0.

Examples

$3x + 2y = 6$

$y = 8$

$3x = 4$

Graphing Linear Equations by Plotting Points

Every linear equation in two variables has infinitely many ordered-pair solutions. Since it is impossible to list every solution, we graph the solutions instead.

The pattern described by the solutions of a linear equation makes "seeing" the solutions possible by graphing because all the solutions of a linear equation in two variables correspond to points on a single straight line.

If we plot a few of these points and draw the straight line connecting them, we have a complete graph of all the solutions.

To Graph a Linear Equation in Two Variables

- ❖ Find three ordered-pair solutions.
- ❖ Graph the solutions.
- ❖ Draw the line through the plotted points.

To Find an Ordered-pair Solution of an Equation

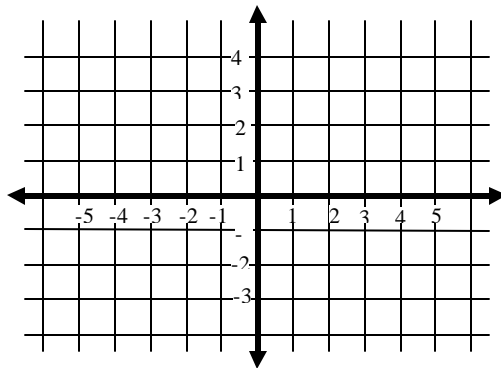
- ❖ Choose either an x -value or y -value of the ordered pair.
- ❖ Complete the ordered pair.

- a. Make a table of values. b. Graph the line. c. Answer the question

1. $y = 3x - 1$

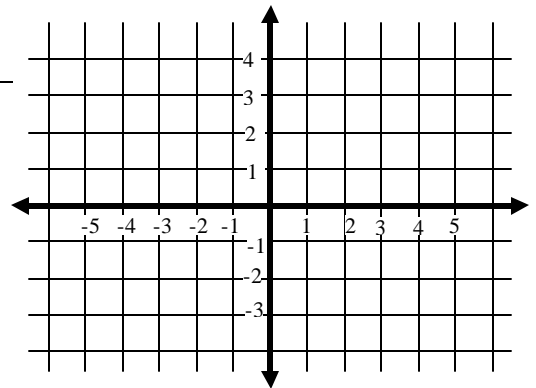
a.

x	y



2. $y = 2 - x$

x	y



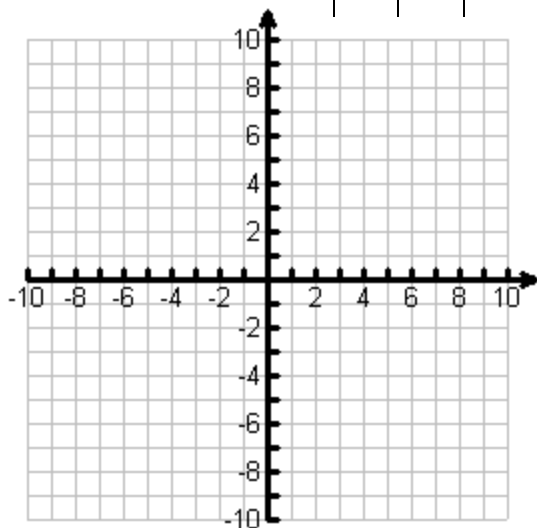
- c. For what value of y will $(-2, y)$ be on the line? c. For what value of x will $(x, 4)$ be on the line?

Helpful Hint: All three points should fall on the same straight line. If not, check your ordered-pair solutions for a mistake.

Graph each equation. Label three ordered pairs on the graph.

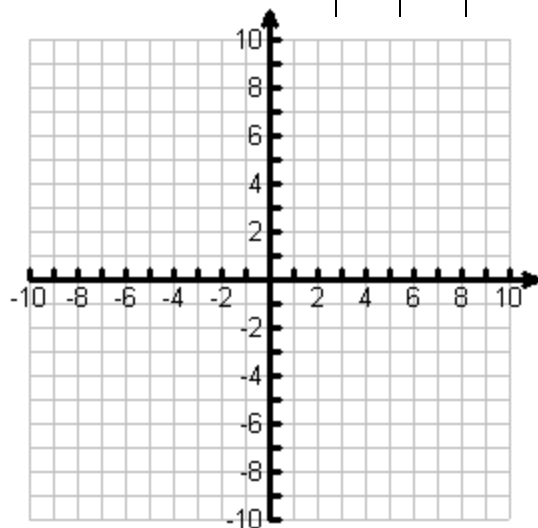
1. page 577 #6

x	y



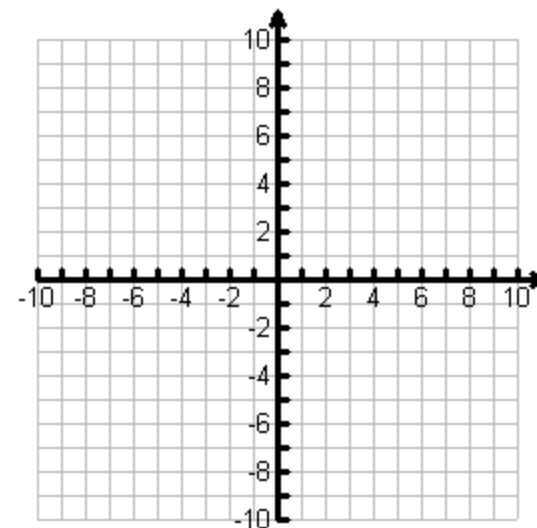
2. page 577 #4

x	y



3. page 578 # 20

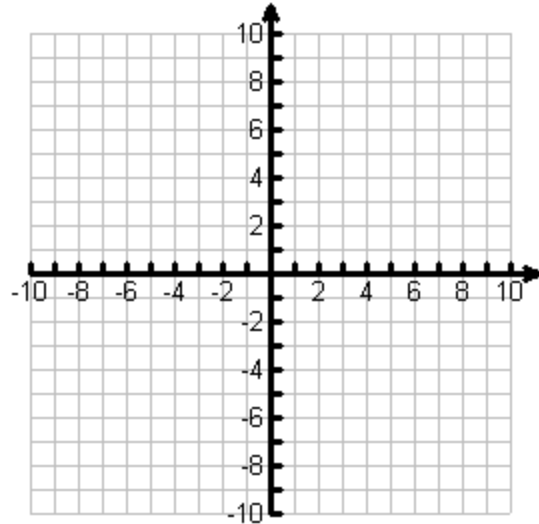
x	y



SHOW WORK!

4. page 577 #10

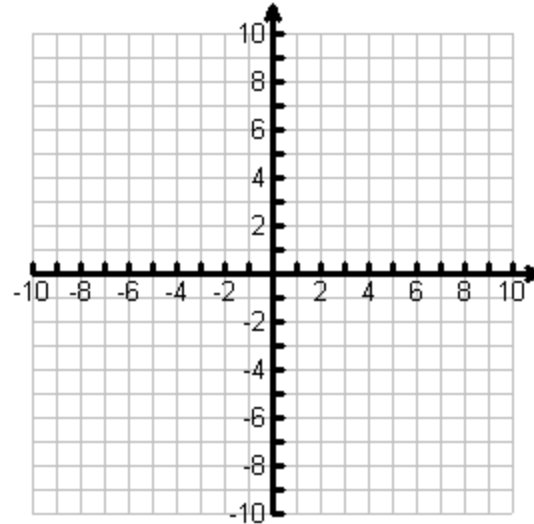
x	y



SHOW WORK!

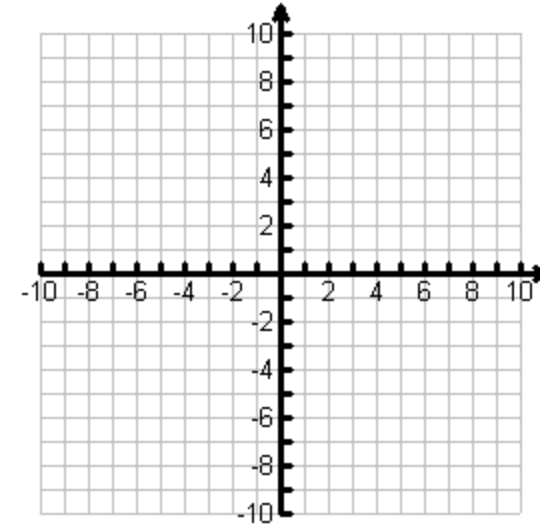
5. page 578 # 12

x	y



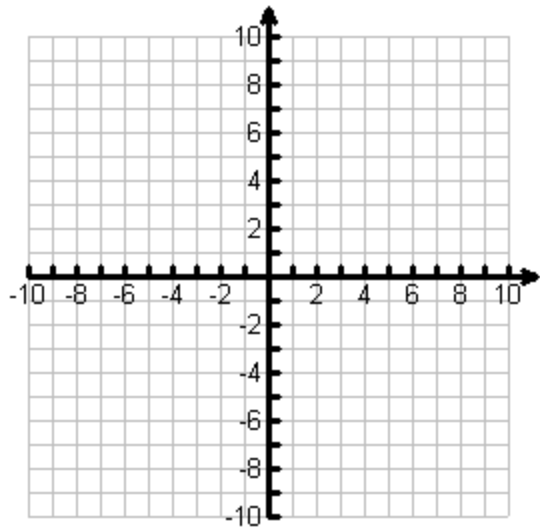
6. page 578 #14

x	y



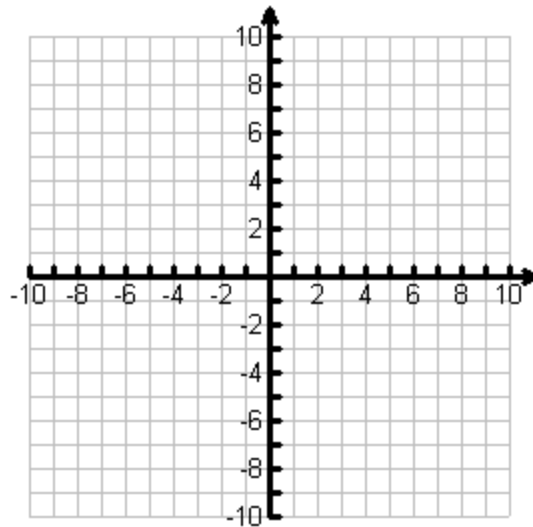
7. page 579 #32

x	y



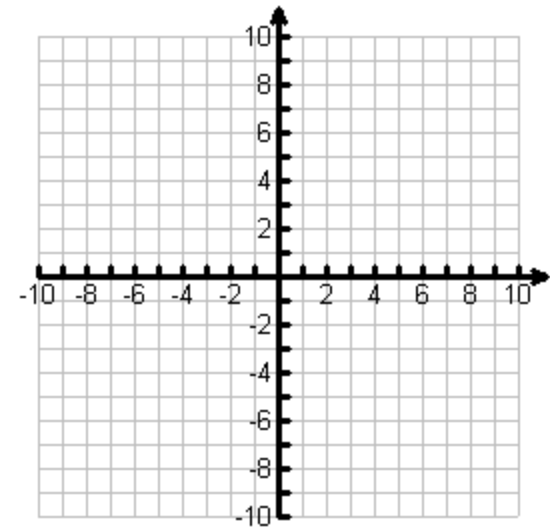
8. page 579 # 34

x	y



9. page 579 # 36

x	y



SHOW WORK!