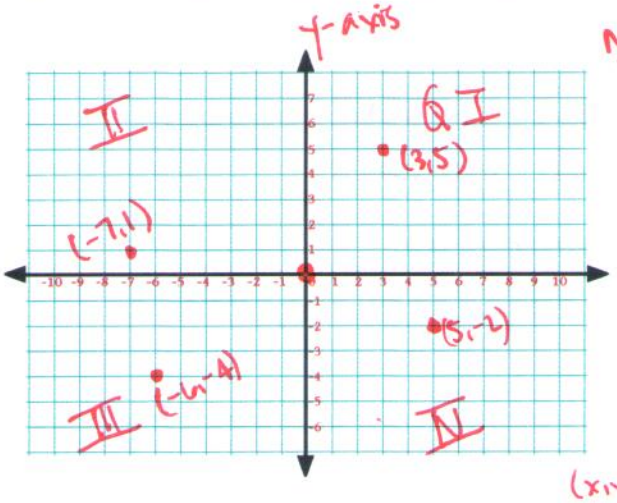
Functions and Graphing

I. Plotting Points

A Cartesian (rectangular) coordinate plane is shown below.

1. Label the origin, x- and y-axis, and Quadrants I, II, III, IV.
2. Plot and label the points (5, 2), (-7, 1), (-6, -4), and (3, -5).



Note- • called a "scatterplot"
• set notation - { }
• A relation is a set of ordered pairs

3. Write the relation in set notation: $\{(5,2), (-7,1), (-6,-4), (3,-5)\}$ (x,y)

Defn: Domain-- the set of all possible x-values.

Defn: Range-- the set of all possible y-values.

4. What is the domain of the relation above? D: $\{5, -7, -6, 3\}$

5. What is the range? R: $\{2, 1, -4, -5\}$

II. Functions

Defn: Function-- a relation in which each element in the domain corresponds to at most one element in the range

(ie. there can't be 2 different y-values for one x-value.

Function Notation:

$y = f(x)$ (output, input)

Read "y equals f of x"
or "y is a function of x"

Ex: $y = -(1/2)x + 11$

Rewrite the function using the function name *h*. $h(x) = -\frac{1}{2}x + 11$

Evaluate the function *h* at x= -6

$$h(6) = -\frac{1}{2}(-6) + 11$$
$$= 3 + 11$$
$$= 14$$

Graph the function using graphing calculator.

What is the domain? all real numbers

What is the range? all real numbers

Verify that *h* is a function using the **Vertical Line Test**. ✓

Check your calculation of h(-6) using the Table in your calculator. ✓