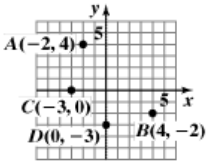
Chapter 1
Equations and Inequalities

Section 1.1

Check Point Exercises

1. Plot points:



2. $x = -3, y = 7$

$x = -2, y = 6$

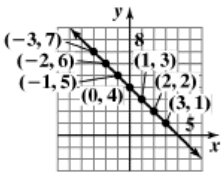
$x = -1, y = 5$

$x = 0, y = 4$

$x = 1, y = 3$

$x = 2, y = 2$

$x = 3, y = 1$



$y = 4 - x$

3. $x = -4, y = 3$

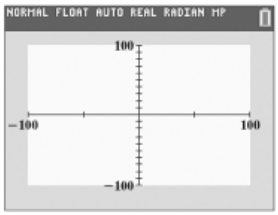
$x = -3, y = 2$

4. The meaning of a [−100,100,50] by [−100,100,10] viewing rectangle is as follows:

$$[\underbrace{-100}_{\substack{\text{minimum}\\ x\text{-value}}}, \underbrace{100}_{\substack{\text{maximum}\\ x\text{-value}}}, \underbrace{50}_{\substack{\text{distance}\\ \text{between}\\ x\text{-axis}\\ \text{tick}\\ \text{marks}}}]$$

by

$$[\underbrace{-100}_{\substack{\text{minimum}\\ y\text{-value}}}, \underbrace{100}_{\substack{\text{maximum}\\ y\text{-value}}}, \underbrace{10}_{\substack{\text{distance}\\ \text{between}\\ y\text{-axis}\\ \text{tick}\\ \text{marks}}}]$$



5. **a.** The graph crosses the x-axis at $(-3, 0)$.
Thus, the x-intercept is -3.
The graph crosses the y-axis at $(0, 5)$.
Thus, the y-intercept is 5.

b. The graph does not cross the x-axis.
Thus, there is no x-intercept.
The graph crosses the y-axis at $(0, 4)$.
Thus, the y-intercept is 4.

c. The graph crosses the x- and y-axes at

Examples:

1. Evaluate the algebraic expression for the given values of the variables.

$$\frac{3x+y}{x-1};\ x=-4 \text{ and } y=2$$

2. *a)* Find $\{10,12,14,16\}\cap\{9,11,13,15\}$. *b)* Find $\{10,12,14,16\}\cup\{9,11,13,15\}$.

3. Rewrite the expression without absolute value bars.

$$\|-4|-|-8\|$$

4. Simplify the algebraic expression.

$$4-3[6-(3y-2)]$$

Teaching Notes:

- Remind students about the correct sign of the answer when they raise a negative number to an even power or an odd power.
- Emphasize "Properties of the Real Numbers" in the book.
- Some students want to say "Communative Property" rather than "Commutative Property".
- Remind students of the difference between evaluating $(-2)^2$ and -2^2.
- When simplifying algebraic expressions that contain multiple symbols of inclusion, encourage students to write out all of the steps. Some students will try to eliminate all of the symbols of inclusion in one step by performing some of the operations mentally. This habit should be discouraged before students begin to solve equations.

Answers: *1.* 2 ; *2. a)* $\varnothing$, *b)* $\{9,10,11,12,13,14,15,16\}$; *3.* 4 ; *4.* $9y-20$