

## Section 6.6 General Form of the Equation for a Linear Relation

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The general form of the equation of a line is

$$Ax + By + C = 0$$

where  $A$  is a whole number and  $B$  and  $C$  are integers.

Recall: Whole numbers: 0, 1, 2, 3, 4, 5, etc....  
Integers: ... -3, -2, -1, 0, 1, 2, 3 ...

### Example 1

Which equations are written in general form. Explain why or why not.

a)  $5x - 7y - 15 = 0$

b)  $3x + 5y = -9$

c)  $-2x + 5y - 7 = 0$

d)  $4x - 3y + 6 = 0$

### Example 2 Rewrite in general form.

a)  $3x + 5y = -9$

b)  $-2x + 5y - 7 = 0$

c)  $y = -\frac{2}{3}x + 4$

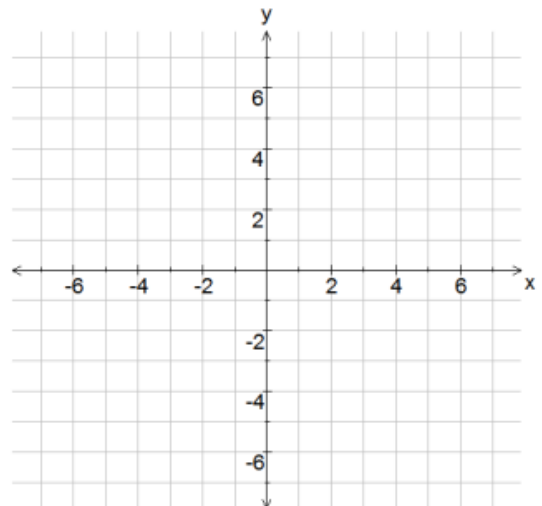
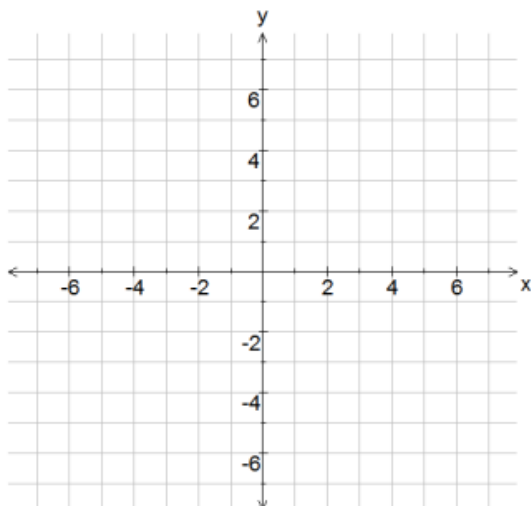
d)  $y - 1 = \frac{3}{5}(x + 2)$

### Example 3

- (i) Determine the slope and y-intercept of each line in General Form.
- (ii) Graph each line using the slope and y-intercept.

a)  $2x + 4y - 12 = 0$

b)  $3x - 5y - 15 = 0$



### Example 4

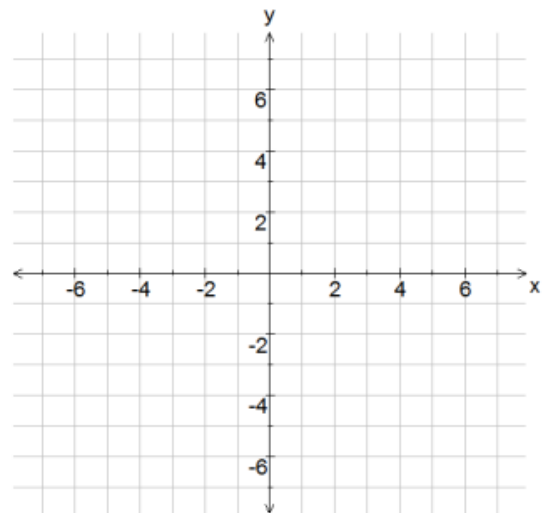
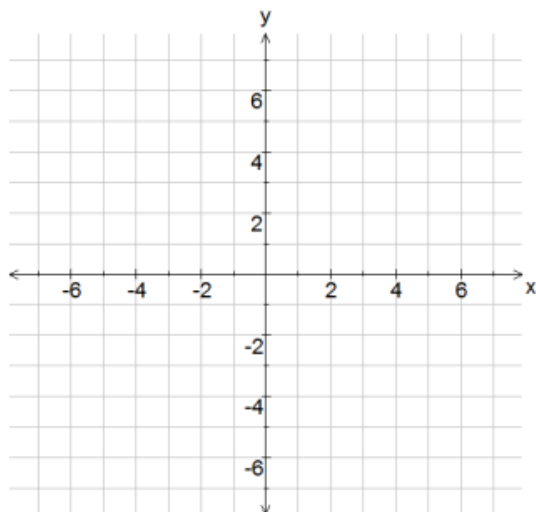
- (i) Determine the x and y-intercepts of each line in General Form.
- (ii) Graph each line using the x and y-intercepts.

#### Remember:

- To determine the x-intercept, let  $y = 0$  and solve for x.
- To determine the y-intercept, let  $x = 0$  and solve for y.

a)  $3x + 2y - 12 = 0$

b)  $x + 3y + 6 = 0$



**Note:**

Equations are equivalent if the same number is added or subtracted to both sides or if the entire equation is multiplied or divided by the same number.

There are many strategies to determine if linear relations are equivalent.

1. Rewrite all equations in the same form to see if they are the same.
  2. Check slope and y-intercept of each relation and see if they are the same.
  3. Check to see if the equations are multiples of each other.
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**Example 5**

Explain why each of the following are pairs are equivalent linear relations?

a)  $y - 4 = -2(x + 1)$  and  $2x + y - 2 = 0$

b)  $x - 4y + 3 = 0$  and  $3x - 12y + 9 = 0$

c)  $x - 2y + 8 = 0$  and  $y = \frac{1}{2}x + 4$

d)  $y = 3x + 5$  and  $y + 4 = 3(x + 3)$

**Work Book Questions**

p.384 - 385 #5ad, 6ac, 7a, 8a(i)(ii)  
8a(iii)(iv), 12ac, 13ab, 14ab, 18ab,  
22ab, 24bdef

**Extra Practice Questions**

p.384 - 385 #5bc, 6bd, 7b, 12bd,  
13cd, 14cd, 18cd