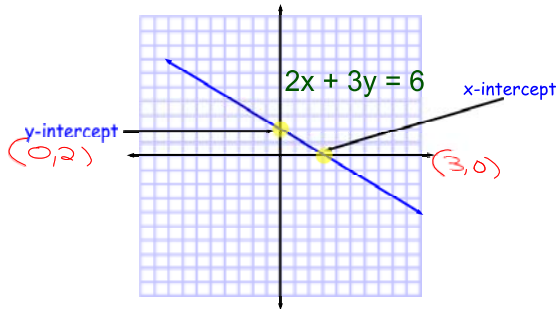


Graphs Using Intercepts

x-intercept - the x-coordinate of a point where the graph crosses the x-axis; where $y = 0$.

y-intercept - the y-coordinate of a point where the graph crosses the y-axis; where $x = 0$.



Graphs Using Intercepts

To graph using intercepts:

1.) Find the x-intercept by replacing y with 0 .
(show this work!) Graph that point.

2.) Find the y-intercept by replacing x with 0 .
(show this work!) Graph that point.

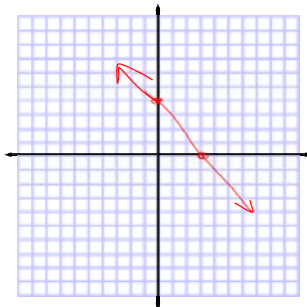
3.) Draw the line through these points

Graphs Using Intercepts

(a) Use intercepts to graph the equation
 $4x + 3y = 12$.

WORK: $y = 0$
 $4x + 3(0) = 12$
 $4x = 12$
 $x = 3$
 $(3, 0)$

$x = 0$
 $4(0) + 3y = 12$
 $3y = 12$
 $y = 4$
 $(0, 4)$

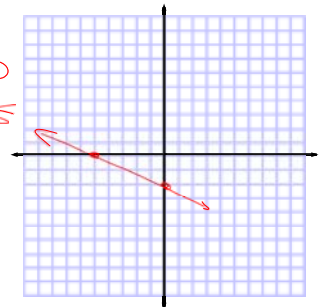


Graphs Using Intercepts

(b) Use intercepts to graph the equation
 $2x + 5y = -10$

WORK: $x = 0$
 $2(0) + 5y = -10$
 $5y = -10$
 $y = -2$
 $(0, -2)$

$y = 0$
 $2x + 5(0) = -10$
 $2x = -10$
 $x = -5$
 $(-5, 0)$



c) Write an equation of the line that is parallel to $y = -x - 5$ and passes through $P(-3, 6)$.

a) Use slope-intercept form.

$$m = -1 \quad (-3, 6)$$

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

$$y - 6 = -1(x + 3)$$

$$y - 6 = -x - 3$$

$$\begin{array}{r} +6 \\ +6 \end{array}$$

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

d) Write an equation of the line that is perpendicular to $y = \frac{1}{2}x - 1$ and passes through $P(-3, 6)$.

a) Use slope-intercept form.

$$m_{\perp} = -2 \quad (-3, 6)$$

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

$$y - 6 = -2(x + 3) \leftarrow \text{pt slope form}$$

$$y - 6 = -2x - 6$$

$$\begin{array}{r} +6 \\ +6 \end{array}$$

$$\boxed{y = -2x}$$

e) Write the equation of the line, in standard form, perpendicular to $4x - 5y = 21$ passing through $(4, -6)$.

find slope $4x - 5y = 21$

$$\begin{array}{r} -4x \\ -4x \end{array}$$

$$\begin{array}{r} -5y = -4x + 21 \\ -5 \\ -5 \end{array}$$

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

$$y = \frac{4}{5}x - \frac{21}{5}$$

$$m_{\perp} = -\frac{5}{4}$$

slope = slope (x, y) slope

$$\frac{-5}{4} \rightarrow \frac{y + 6}{x - 4}$$

$$4(y + 6) = -5(x - 4) \quad Ax + By = C$$

$$\begin{array}{r} 4y + 24 = -5x + 20 \\ +5x \quad -24 \quad +5x \quad -24 \end{array}$$

$$\boxed{5x + 4y = -4}$$