

Oct 22 4.5 Interpreting Ax + By + C = 0

The equation $3x - 2y - 6 = 0$ defines a line.
 a) Determine the x and y intercept of the line.

x-int:
 Substitute $y = 0$
 $3x - 2(0) - 6 = 0$
 $3x - 6 = 0 + 6$
 $3x = 6$
 $\frac{3x}{3} = \frac{6}{3}$
 $x = 2$

y-int:
 Make $x = 0$
 $3(0) - 2y - 6 = 0$
 $-2y - 6 = 0 + 6$
 $-2y = 6$
 $\frac{-2y}{-2} = \frac{6}{-2}$
 $y = -3$

b) Graph the line

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A line is defined by $3x - 4y + 16 = 0$
 a) Determine the slope and y - intercept of the line

$y = mx + b$
 $3x - 4y + 16 = 0 + 4y$
 $3x + 16 = 4y$
 $\frac{3x}{4} + \frac{16}{4} = \frac{4y}{4}$
 $\frac{3x}{4} + 4 = y$
 slope $\rightarrow \frac{3x}{4}$
 y-int $\rightarrow 4$

b) Graph the line

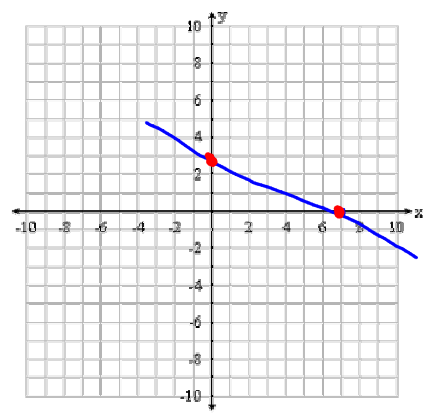
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Graph the line $3x + 7y = 21$

x-int
 $3x = 21$
 $x = 7$

y-int
 $7y = 21$
 $y = 3$

$3x + 7y = 21$
 $7y = 21 - 3x$
 $y = 3 - \frac{3x}{7}$



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Two perpendicular lines intersect on the x-axis. The equation of one line is $2x - 3y + 6 = 0$. Determine the equation of the second line.

- We know:**
 1. Both lines have the same x-intercept.
 2. The slopes of the lines are the negative reciprocal of each other.

x-int
 $2x - 3(0) + 6 = 0$
 $2x + 6 = 0$
 $2x = -6$
 $x = -3$
 Point: $(-3, 0)$

Slope
 Manipulate our eqn into the form $y = mx + b$.
 $2x - 3y + 6 = 0$
 $2x + 6 = 3y$
 $\frac{2x}{3} + 2 = y$
 Slope of our 2nd line is $-\frac{3}{2}$

$y = -\frac{3}{2}x + b$
 $0 = -\frac{3}{2}(-3) + b$
 $0 = \frac{9}{2} + b$
 $-\frac{9}{2} = b$

$y = mx + b$
 $y = -\frac{3}{2}x - \frac{9}{2}$
 $2y = -3x - 9$
 $3x + 2y + 9 = 0$

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Assignment:

Pg. 233

4a odds

6a odds

11, 12

14 odds

15 a, 17

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