Jeffrey Seguritan
10/7/2007

Graph each equation or system of equations

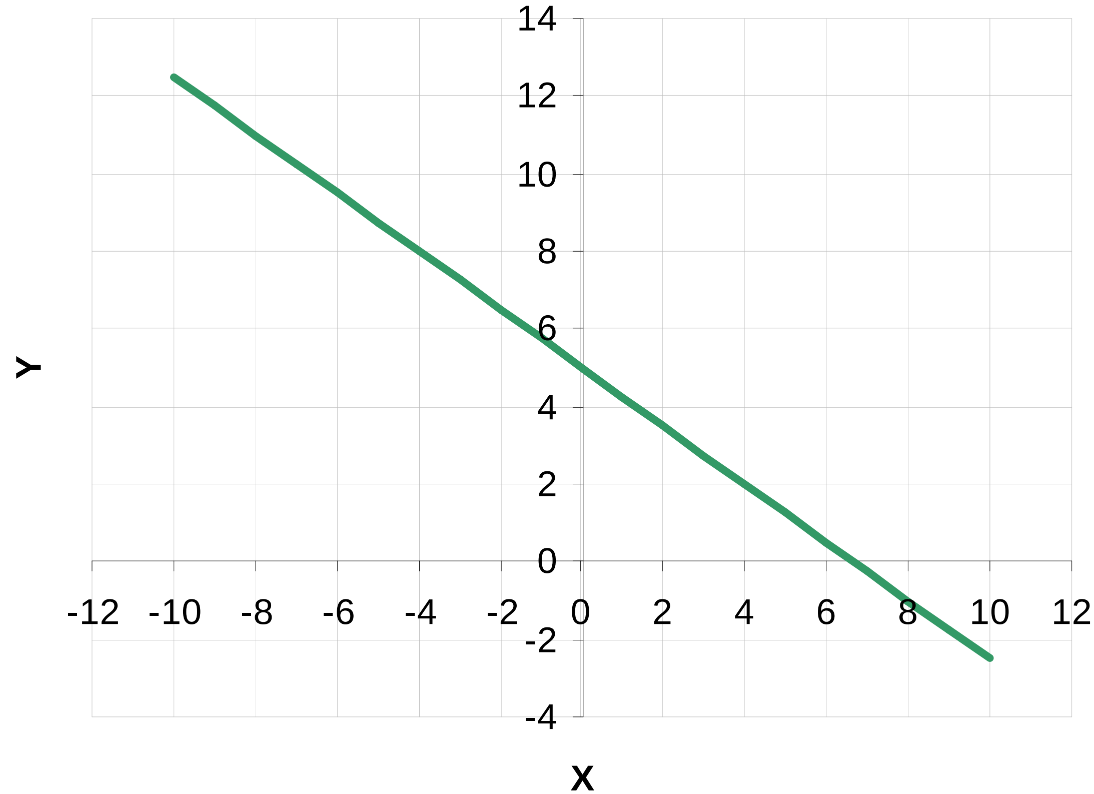
$$3x + 4y = 20$$

The best way to graph these equations is to convert it to standard form (by isolating y):

$$3x + 4y = 20$$

$$4y = -3x + 20$$

$$y = -\frac{3}{4}x + 5$$



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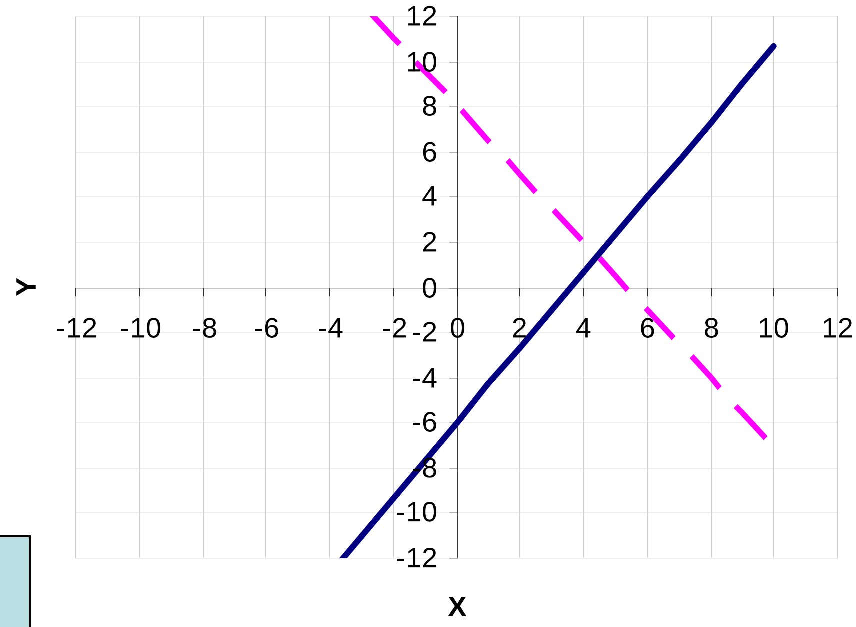
Graph each equation or system of equations

$$5x - 3y \geq 18$$
$$3x + 2y > 16$$



Again, the best way to graph these equations is to convert it to standard form (by isolating y). For the meantime, ignore the inequalities:

$5x - 3y \geq 18$	$3x + 2y > 16$
$-3y \geq -5x + 18$	$2y > -3x + 16$
$y \leq \frac{5}{3}x - 6$	$y > -\frac{3}{2}x + 8$

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Graph each equation or system of equations

$$5x - 3y \geq 18$$

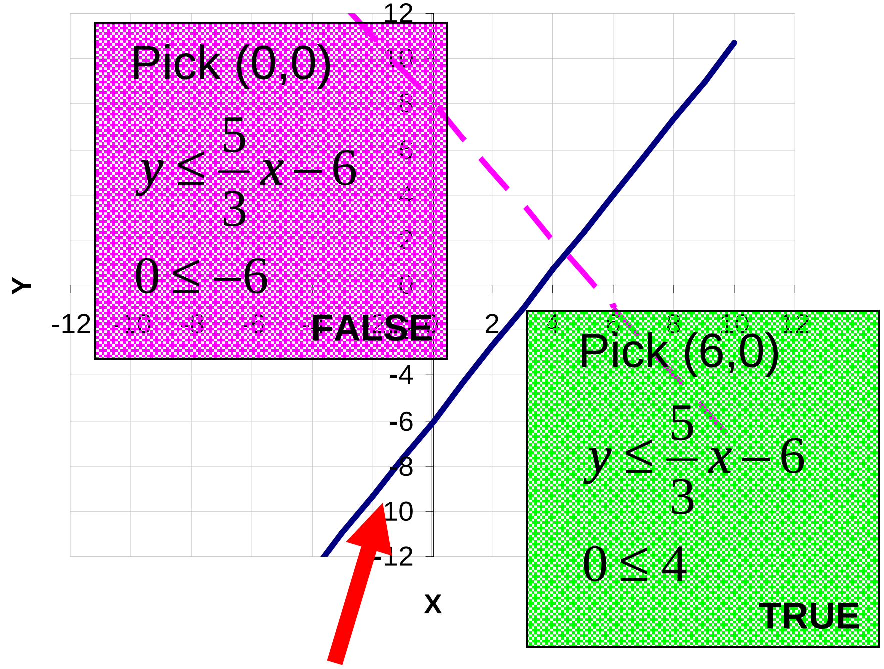
$$3x + 2y > 16$$

Once you've drawn the lines, you have to figure out which side of the line satisfies the inequality. The easiest way to do this is to pick points on both sides of the line and test them out.

$$5x - 3y \geq 18$$

$$-3y \geq -5x + 18$$

$$y \leq \frac{5}{3}x - 6$$



$$y \leq \frac{5}{3}x - 6$$

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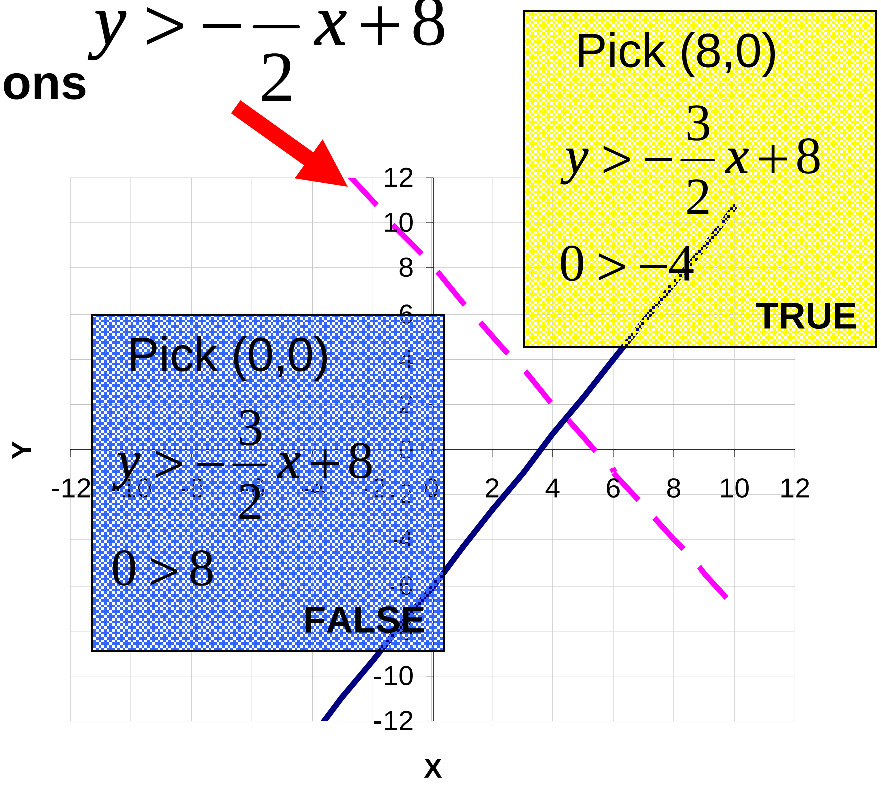
Graph each equation or system of equations

$$5x - 3y \geq 18$$

$$3x + 2y > 16$$

$$y > -\frac{3}{2}x + 8$$



Once you've drawn the lines, you have to figure out which side of the line satisfies the inequality. The easiest way to do this is to pick points on both sides of the line and test them out.

$$3x + 2y > 16$$

$$2y > -3x + 16$$

$$y > -\frac{3}{2}x + 8$$

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10/7/2007

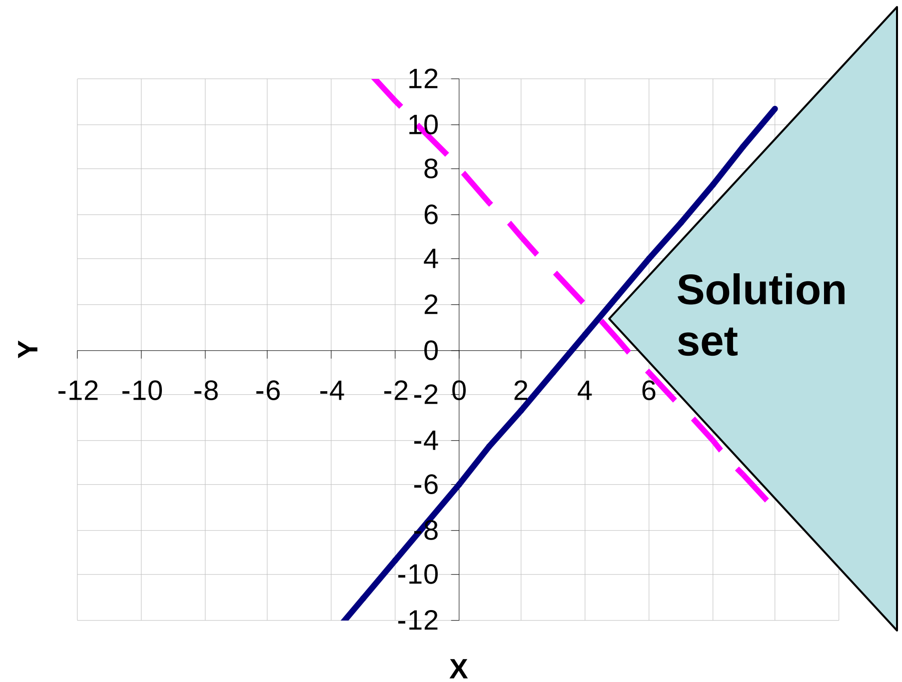
Graph each equation or system of equations

$$5x - 3y \geq 18$$

$$3x + 2y > 16$$

Now we can overlap the regions to find the set of points that satisfy both equations.

Also note that the "greater than or equal to" indicates a *solid line*, while a "greater than" should indicate a *dashed line* (since the line itself is NOT included in the solution set)



Jeffrey Seguritan
10/7/2007

Ann can paddle her canoe 15 miles downstream in 2 hours. The return trip takes 3 times as long.

- **What is the rate of the current?**
- **How fast could Ann paddle her canoe if there were no current?**

It's very clear the current is contributing some constant rate in favor of any downstream movement, and against any upstream movement, so we have to take this into account.

Let x = rate if NO current

Let y = rate due to current

$$x + y = \frac{15mi}{2hr} = 7.5mph$$

$$x - y = \frac{15mi}{3 \times 2hr} = 2.5mph$$

We need to solve these equations simultaneously.

Jeffrey Seguritan
10/7/2007

Ann can paddle her canoe 15 miles downstream in 2 hours. The return trip takes 3 times as long.

- **What is the rate of the current?**
- **How fast could Ann paddle her canoe if there were no current?**

$$x + y = 7.5$$

$$+ \quad x - y = 2.5$$

$$2x = 10$$

Add the two equations, and we get: $x = 5mph$

This means that Ann paddles the canoe at 5mph, if we assume no current.

Knowing that x = 5, we can plug this into any of the original equations and solve for y, which is the rate contributed by the current. I've used the first equation:

$$x + y = 7.5$$

$$5 + y = 7.5$$

$$y = 7.5 - 5 = 2.5mph$$

This means the current contributes 2.5 mph in the downstream direction.

Jeffrey Seguritan
10/7/2007

Given the functions *g* and *h* defined by:

$$g(x) = 2x - 5$$

$$h(x) = (x-3)^2 + 5$$

Find:

$$g(6)$$

$$h(-4)$$

$$g(h(3))$$

$$h(g(-3))$$

Ok. So for the first two, you just need
to plug in the x-value into the function:

$$g(6) = 2(6) - 5 = 12 - 5 = 7$$

$$h(-4) = (-4-3)^2 + 5 = (-7)^2 + 5 = 49 + 5 = 54$$

Jeffrey Seguritan
10/7/2007

Given the functions *g* and *h* defined by:

$$g(x) = 2x - 5$$

$$h(x) = (x-3)^2 + 5$$

Find: $g(h(3))$

$h(g(-3))$

For the next two, you have to start by plugging the x-value into the INNER function. Then the function value for that becomes the x-value for the OUTER function:

$$h(3) = (3-3)^2 + 5 = 5$$

$$g(h(3)) = g(5) = 2(5) - 5 = 10 - 5 = 5$$

$$g(-3) = 2(-3) - 5 = -6 - 5 = -11$$

$$h(g(-3)) = h(-11) = (-11-3)^2 + 5 = (-14)^2 + 5 = 201$$