Questions from homework: Solving Linear Systems Algebraically

(3) $x + 2y = -10$

$-5x + 8y = 14$

$x = -2y - 10$

$-5(-2y - 10) + 8y = 14$

$10y + 50 + 8y = 14$

$18y = -36$

$y = -2$

then find x

(7) $2x + 2y = -12$

$-3x - 4y = 23$

$2x + 2y = -12$

$2x = -2y - 12$

$x = -y - 6$

$-3(-y - 6) - 4y = 23$

$3y + 18 - 4y = 23$

$-y = 5$

$y = -5$

$x = -(-5) - 6$

$x = 5 - 6$

$x = -1$

$(-1, -5)$

(17) $2(-5x - 5y = -5)$

$-5(-2x + 8y = 18)$

$-10x - 10y = -10$

$10x - 40y = -90$

$-50y = -100$

$y = 2$

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

$-5x - 10 = -5$

$-5x = 5$

$x = -1$

$(-1, 2)$

Review

a. Solve using substitution

$\begin{cases} -2x+y=-4 \\ 2x+3y=12 \end{cases}$

$y=2x-4$

$2x+3(2x-4)=12$

$2x+6x-12=12$

$8x-12=12$

$8x=24$

$x=3$

$y=2(3)-4$

$y=2$

$(3,2)$

b. Solve using elimination

$\begin{cases} 2x+3y=5 \\ 4x+6y=2 \end{cases}$ $\cdot(-2)$

$-4x-6y=-10$

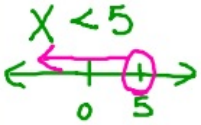
$4x+6y=2$

$0=-8$

no solution

Inequalities

Two things: **Solid or Dotted?** **Shade Above or Below?**



$\leq$ or $\geq$ means SOLID LINE.

$<$ or $>$ means DOTTED LINE.

$y>$ or $\geq$ means shade ABOVE THE LINE.

$y<$ or $\leq$ means shade BELOW THE LINE.

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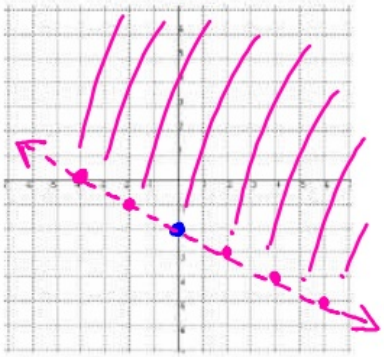
1. Graph: $y>-\frac{1}{2}x-2$

$m=\frac{-1}{2}=\frac{1}{-2}$

$b=-2$

Means DOTTED line, AND shade ABOVE.



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2. Graph: $4x-2y\leq 12$

First, solve for y:

Divide by a negative? What happens?

$-4x \quad -4x$

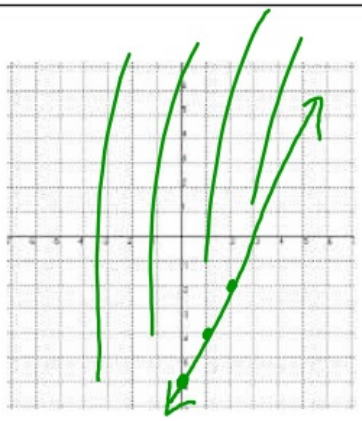
$\frac{-2y}{-2} \leq \frac{-4x}{-2}+\frac{12}{-2}$

$y\geq 2x-6$

$m=\frac{2}{1}$

$b=-6$

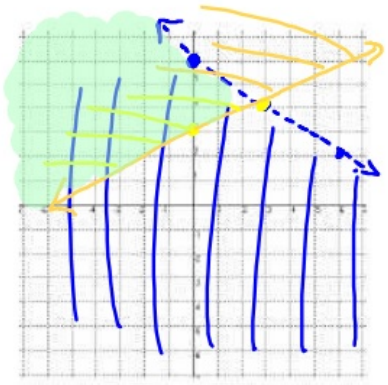
Then: **DOTTED or SOLID line?**
Shade ABOVE or BELOW?



3. **Graph together:** $\begin{cases} y < -\frac{2}{3}x + 6 \\ y \geq \frac{1}{3}x + 3 \end{cases}$

$m = -\frac{2}{3}$ $b = 6$

$m = \frac{1}{3}$ $b = 3$



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4. **Graph the system of inequalities:**

$\begin{cases} 2x + y > 5 \\ 3x - y > 2 \end{cases}$

$y > -2x + 5$

$m = -2$

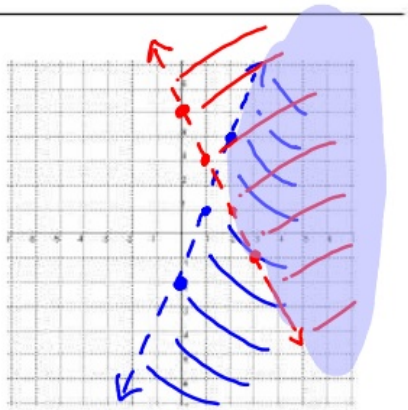
$b = 5$

$-y > -3x + 2$

$y < 3x - 2$

$m = 3$

$b = -2$



Homework!!

Worksheet