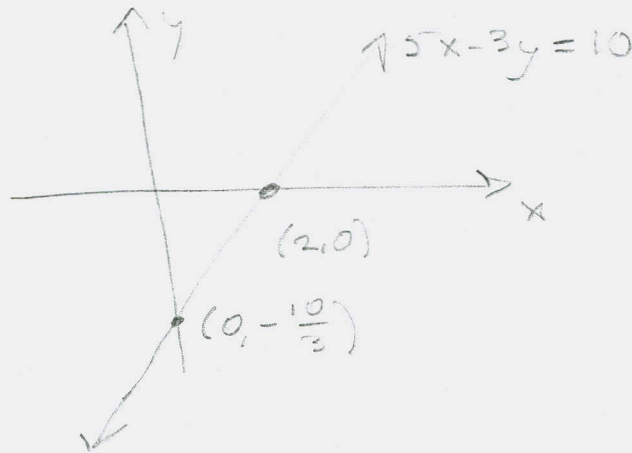


1. (8 pts) Graph the linear equation $5x - 3y = 10$. Show x - and y -intercepts.

x	y
0	$-\frac{10}{3}$
2	0



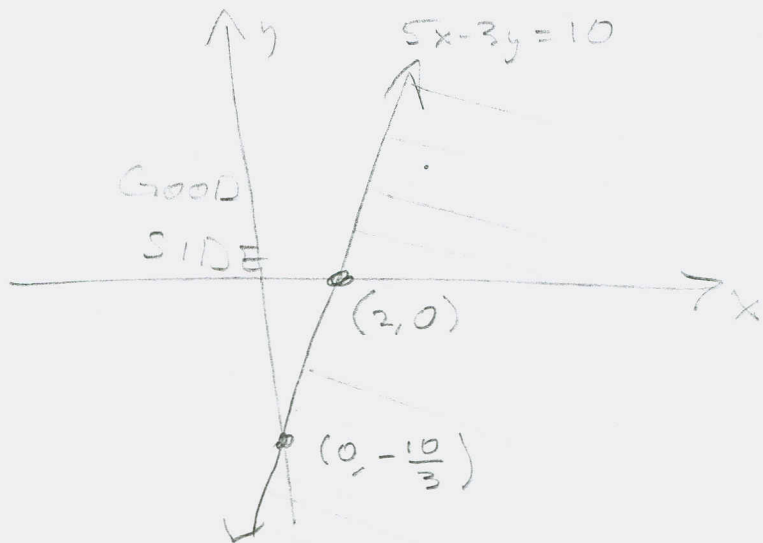
2. (7 pts) Graph the linear inequality $5x - 3y \leq 10$. Be sure and show the "good stuff" clearly.

Hint: Use your work from #1.

$$5(0) - 3(0) \leq 10?$$
$$0 \leq 10?$$

Yes

$(0, 0)$ good



3. (5 pts) Graph the *intersection* of the following inequalities on the same set of coordinate axes. In other words, assume this is an AND situation, as in class. Hint: Use your work from #2.

$$5x - 3y \leq 10$$

$$3x + 4y \leq 12$$

$$x \geq 0$$

$$3x + 4y = 12$$

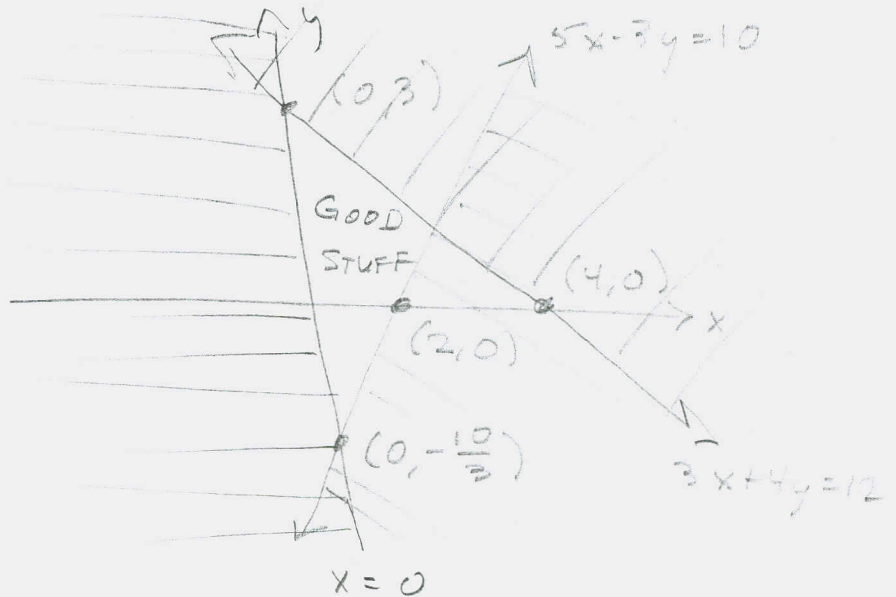
x	y
0	3
4	0

$$3(0) + 4(0) \leq 12?$$

$$0 \leq 12?$$

Yes.

(0,0) Good



4. (5 pts) Write $3x + 7y = 11$ using function notation. What is the slope?

$$7y = -3x + 11$$

$$y = \frac{-3x + 11}{7}$$

$$y = \frac{-3x}{7} + \frac{11}{7}$$

$$f(x) = -\frac{3}{7}x + \frac{11}{7}$$

$$m = -\frac{3}{7}$$

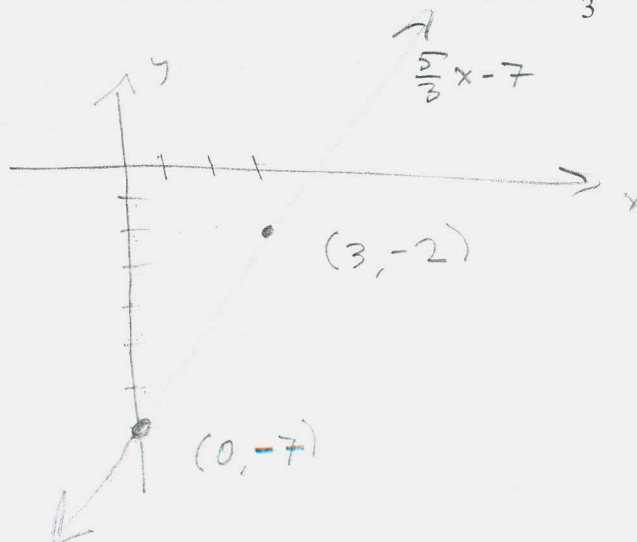
5. (5 pts) Use the slope and y-intercept to graph the linear function $f(x) = \frac{5}{3}x - 7$. (I don't need to see an x-intercept.)

$$m = \frac{5}{3}$$

$$b = -7$$

UP 5

RIGHT 3



6. (5 pts) Find the slope of the line through (2, -6) and (-5, 4).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-6)}{-5 - 2} = \frac{10}{-7}$$

7. (5 pts) Find an equation of the line through (2, -6) and (-5, 4). Give your final answer in **point-slope form**. Hint: Use your work from #6. (Shouldn't take much room!)

$$y - y_1 = m(x - x_1) \implies y - (-6) = -\frac{10}{7}(x - 2)$$

8. (5 pts) Re-write your answer to #7 in **slope-intercept form**.

$$y + 6 = -\frac{10}{7}x + \frac{20}{7}$$

$$\begin{aligned} \frac{20}{7} - \frac{6}{1} \cdot \frac{7}{7} &= \frac{20 - 42}{7} \\ &= -\frac{22}{7} \end{aligned}$$

$$y = -\frac{10}{7}x + \frac{20}{7} - 6$$

$$y = -\frac{10}{7}x - \frac{22}{7}$$

9. (5 pts) Re-write your answer to #7 in **function notation**. (Shouldn't take much room!)

$$f(x) = -\frac{10}{7}x - \frac{22}{7}$$

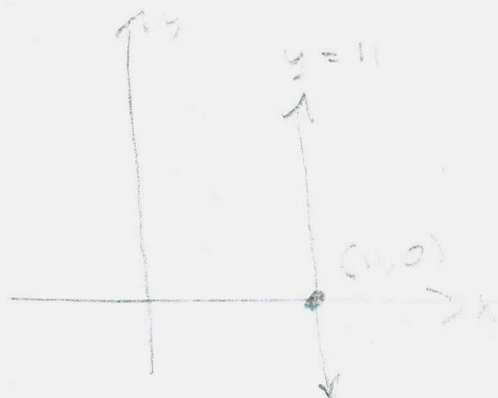
10. (5 pts) Re-write your answer to #7 in **standard form**, with only integer coefficients.

$$\frac{10}{7}x + y = -\frac{22}{7}$$

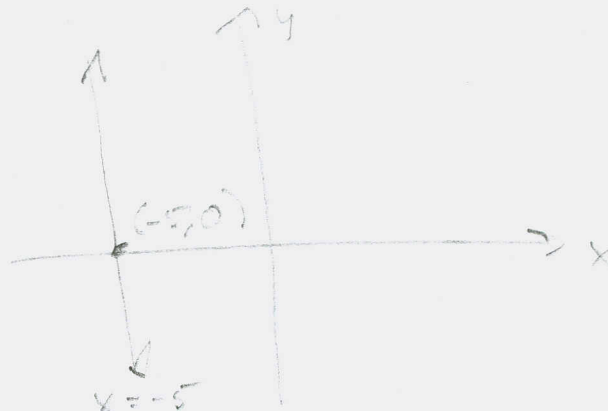
$$10x + 7y = -22$$

Graph the following linear equations:

11. (5 pts) $y = 11$



12. (5 pts) $x = -5$



13. (10 pts) Amanda can clean the windows of Benedetto's tropy home in 12 hours. Steve, a much better window washer, can do the job in a mere 15 hours. Steve is *so* good, he doesn't show up until 10:00 a.m. to help. Amanda starts a 6 a.m. What time will the job be finished?

Let $x =$ the # of hours Amanda spends on the job
 $y =$ " " " " " Steve " " " " " " " " " " " "

Then $\frac{1}{12}x + \frac{1}{15}y = 1$ job

Since $y = x - 4$, we have

$$\frac{1}{12}x + \frac{1}{15}(x - 4) = 1$$

LCD #

$$\left. \begin{array}{l} 12 = 2 \cdot 2 \cdot 3 \\ 15 = 3 \cdot 5 \end{array} \right\} \text{LCD} = 2 \cdot 2 \cdot 3 \cdot 5 = 60$$

$$60\left(\frac{1}{12}x\right) + 60\left(\frac{1}{15}(x-4)\right) = 60(1)$$

$$5x + 4(x-4) = 60$$

$$5x + 4x - 16 = 60$$

$$9x = 76$$

$$x = \frac{76}{9} = 8\frac{4}{9} \text{ hrs}$$

$$\left(\frac{4}{9} \text{ hrs}\right) \left(\frac{60 \text{ min}}{1 \text{ hr}}\right)$$

$$= 26.\bar{6} \text{ min}$$

$$8 \text{ hrs}, 26.\bar{6} \text{ min.}$$

$$\Rightarrow \boxed{2:27 \text{ pm}} \text{ (approx)}$$

14. (5 pts) Find an equation of the line through (2, 5) that is perpendicular to $y = \frac{7}{6}x - 8$. Give your answer in point-slope form. (Shouldn't take much room!)

$$m = \frac{7}{6}$$

$$m_{\perp} = -\frac{6}{7}$$

$$\boxed{y - 5 = -\frac{6}{7}(x - 2)}$$

15. (5 pts) Find an equation of the line through (2, 5) that is parallel to $y = \frac{7}{6}x - 8$. Give your answer in point-slope form. (Shouldn't take much room!)

$$m = \frac{7}{6}$$

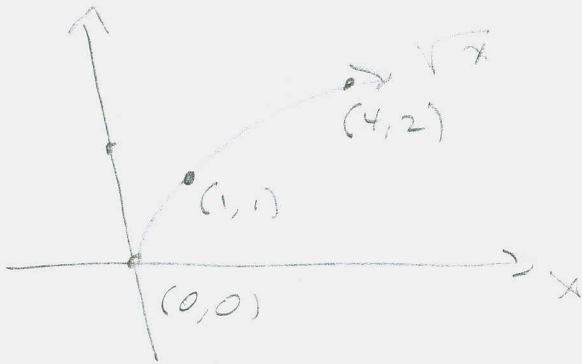
$$m_{\parallel} = \frac{7}{6}$$

$$\boxed{y - 5 = \frac{7}{6}(x - 2)}$$

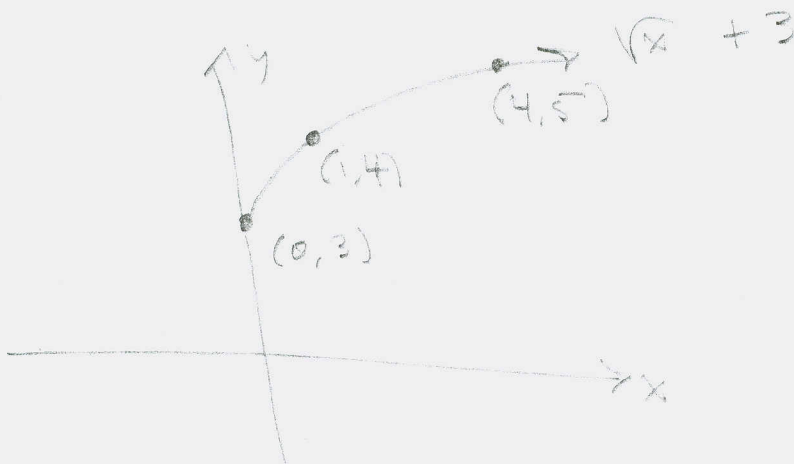
16. (5 pts) Convert $\frac{2}{3}$ hour to minutes.

$$\left(\frac{2}{3} \text{ hr}\right) \left(\frac{60 \text{ min}}{1 \text{ hr}}\right) = \boxed{40 \text{ min}}$$

17. (5 pts) Sketch the graph of $g(x) = \sqrt{x} + 3$ by transforming the basic function $f(x) = \sqrt{x}$.
Two graphs, total. Key points to track: $(0,0)$, $(1, 1)$, and $(4, 2)$.



$$f(x) = \sqrt{x}$$



$$g(x) = \sqrt{x} + 3 = f(x) + 3$$

18. (5 pts) Sketch the graph of $g(x) = (x+4)^2 + 3$ by transforming the basic function $f(x) = x^2$.
Key points to track: $(-1, 1)$, $(0,0)$, and $(1, 1)$.

