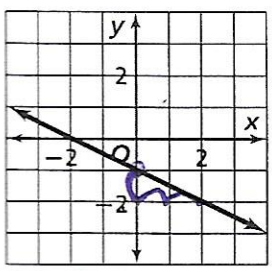
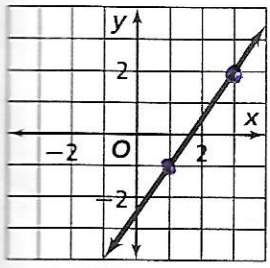
Ms. Hernandez
Precal 1st Pd.
08/26/15

1.1 Lines in the Plane

Problem	Work	Solution
Find slope		
1. $2x-5y=0$	$2x-5y=0$ $-2x \quad -2x$ $\frac{-5y}{-5}=\frac{-2x}{-5}$ $y=\frac{2}{5}x$	$m=\frac{2}{5}$
2. $5x-y=-7$	$5x-y=-7$ $-5x \quad -5x$ $\frac{-1y}{-1}=\frac{-5x}{-1}-\frac{7}{-1}$ $y=5x+7$	$m=5$
3. $x-\frac{2}{3}y=\frac{1}{4}$	$x-\frac{2}{3}y=\frac{1}{4}$ $-x \quad -x$ $\left(\frac{3}{-2}\right)\left(-\frac{2}{3}y\right)=\left(-x+\frac{1}{4}\right)\left(\frac{3}{-2}\right)$ $y=\frac{3}{2}x-\frac{3}{8}$	$m=\frac{3}{2}$
4. 	$m=\frac{\text{rise}}{\text{run}}=\frac{-1}{2}$ Since line is decreasing, the slope must be negative	$m=-\frac{1}{2}$



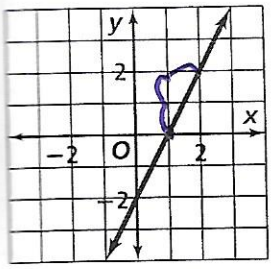
$x_1\ y_1$ $\qquad$ $x_2\ y_2$

$(1,-1)$ and $(3,2)$

Since I can find those two points on the graph I can use the formula.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2-(-1)}{3-1} = \frac{3}{2}$$

$m = \frac{3}{2}$



$$\frac{\text{rise}}{\text{run}} = \frac{2}{1} \qquad m = 2$$

$m = 2$

7. through $(4,-1)$ & $(-2,-3)$

$x_1\ y_1$ $\qquad$ $x_2\ y_2$

$$m = \frac{-3-(-1)}{-2-4} = \frac{-3+1}{-2-4} = \frac{-2}{-6}$$

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

8. $(3,-5)$ & $(1,2)$

$$m = \frac{2-(-5)}{1-3} = \frac{7}{-2}$$

$m = \frac{7}{-2}$

11. Point-slope form.

$(0,1)$ & $(3,0)$

$$m = \frac{0-1}{3-0} = \frac{-1}{3}$$

$x_1\ y_1$

$(0,1)$

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

$y - 1 = -\frac{1}{3}(x-0)$ or $y - 0 = -\frac{1}{3}(x-3)$

10. $(\frac{1}{2}, \frac{2}{3})$ & $(-\frac{3}{2}, \frac{5}{3})$

$$m = \frac{\frac{5}{3} - \frac{2}{3}}{-\frac{3}{2} - \frac{1}{2}} = \frac{\frac{3}{3}}{\frac{-4}{2}} = \frac{1}{-2}$$

$m = -\frac{1}{2}$ $\quad y - y_1 = m(x - x_1)$

$y - \frac{5}{3} = -\frac{1}{2}(x + \frac{3}{2})$ or $y - \frac{2}{3} = -\frac{1}{2}(x - \frac{1}{2})$

11. $(-3, -2)$ & $(1, 6)$

$$m = \frac{6 - (-2)}{1 - (-3)} = \frac{6+2}{1+3} = \frac{8}{4} = 2$$

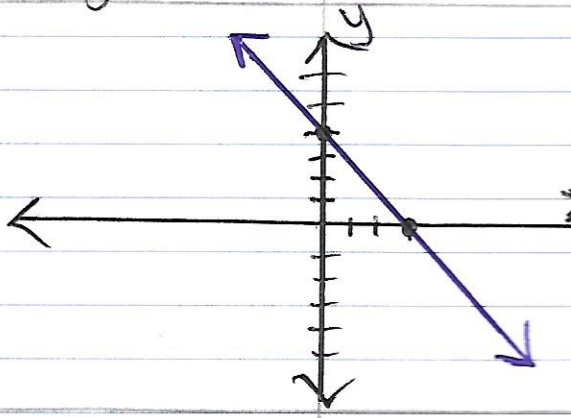
$y - y_1 = m(x - x_1)$

$y + 2 = 2(x + 3)$ or $y - 6 = 2(x - 1)$

12. Graph each equation

$4x + 3y = 12$

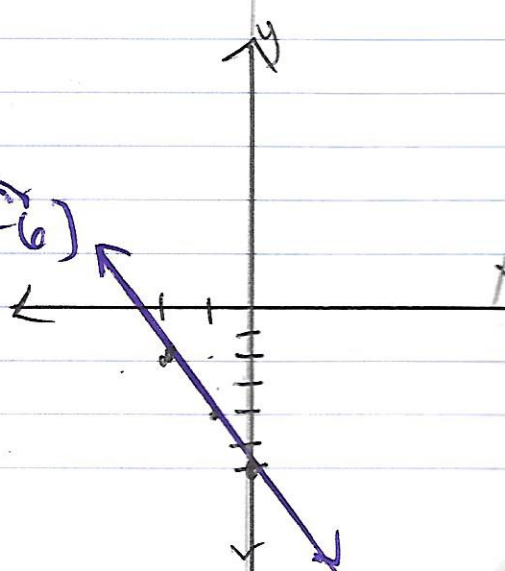
$$4x + 3y = 12$$
$$-4x \quad -4x$$
$$\frac{3y}{3} = \frac{-4x}{3} + \frac{12}{3}$$
$$y = -\frac{4}{3}x + 4$$



13. $\frac{x}{3} - \frac{y}{6} = 1$

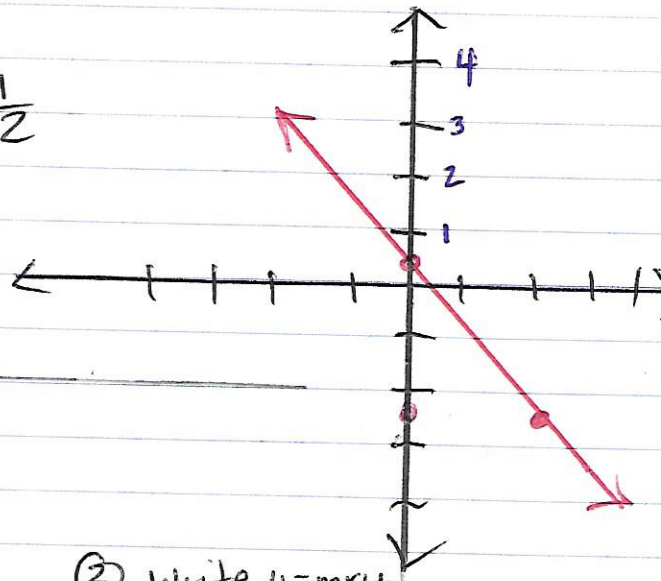
$$\frac{x}{3} - \frac{y}{6} = 1$$
$$-\frac{x}{3} \quad -\frac{x}{3}$$
$$(-6)\left(-\frac{y}{6}\right) = \left(-\frac{x}{3} + 1\right)(-6)$$
$$y = -\frac{6x}{3} - 6$$
$$y = -2x - 6$$

$m = -2 \quad b = -6$



14. $m = \frac{-3}{2}$ $b = \frac{1}{2}$

$y = \frac{-3}{2}x + \frac{1}{2}$



15. Write in standard form $Ax + By = C$

$m = -4$; $(2, 2)$ "b"

① find $y = m \cdot x + b$

$2 = -4(2) + b$

$2 = -8 + b$

$+8 \quad +8$

$10 = b$

so,

② Write $y = mx + b$

$y = -4x + 10$

③ Change to standard form

$y = -4x + 10$

$+4x \quad +4x$

$4x + y = 10$

A, B, & C can't be fractions $4x + y = 10$

16. $m = \frac{2}{5}$; $(-1, 3)$

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

$y - 3 = (x + 1)$

$y - 3 = \frac{2}{5}(x + 1)$

$y - 3 = \frac{2}{5}x + \frac{2}{5}$

$-\frac{2}{5}x \quad +3 \quad -\frac{2}{5}x \quad +3$

$-5\left(-\frac{2}{5}x + y\right) = \left(\frac{17}{5}\right)(-5)$

$2x - 5y = -17$

$2x - 5y = -17$

17. $m=0$; $(3,-4)$

$y-y_1 = m(x-x_1)$
$y+4 = 0(x-3)$
$y+4 = 0$
$y = -4$

$y=-4$

18. Find slope & int. $3x-4y=12$

$-3x \quad -3x$

$\frac{-4y}{-4} = \frac{-3x+12}{-4} \quad \frac{}{-4}$

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

① Solve for y to find m

$m = \frac{3}{4}$

y-int $(0,-3)$

intercepts. y-int (b)

To find x-int: subtitude y for 0

$3x-4y=12$
$3x-4(0)=12$
$\frac{3x}{3} = \frac{12}{3}$
$x=4$

x-int $(4,0)$

19. $y=-2$

$y=-2 \quad m=0$
horizontal line
No x-int
y-int $(0,-2)$

$m=0$
No x-int
y-int $(0,-2)$

20. $f(x)=\frac{4}{5}x+7$

$m=\frac{4}{5}$ y-int $=(0,7)$

x-int $f(x)=\frac{4}{5}x+7$

$\frac{0}{-7} = \frac{4}{5}x \frac{+7}{-7}$

$-7 = \frac{4}{5}x \left(\frac{5}{4}\right) \quad x=\frac{35}{4}$

$m=\frac{4}{5}$
y-int $(0,7)$
x-int $\left(\frac{35}{4},0\right)$

21. $x = 5$

Vertical line $m =$ und
y-int $\Rightarrow$ None
x-int $(5, 0)$

$m =$ und
y-int $\Rightarrow$ No
x-int $(5, 0)$

22. Write eqn. & graph
$(-1, 3)$ //
$y = 2x + 1$

$y = 2x - 1 \qquad m_1 = 2$

Since lines are //, then $m_2 = 2$

$y - y_1 = m(x - x_1)$
$y - 3 = 2(x + 1)$
$y - 3 = 2x + 2$
$+3 \qquad +3$
$y = 2x + 5$

$y = 2x + 5$

23. $(2, 2)$
$\perp$ $y = \frac{-3}{5}x + 2$

$m_1 = \frac{-3}{5} \qquad m_2 = \frac{5}{3}$

$y - 2 = \frac{5}{3}(x - 2)$

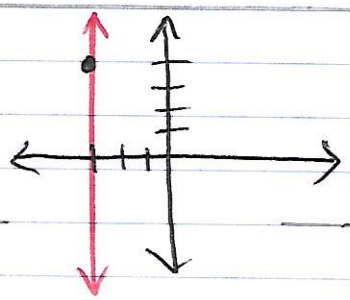
$y - 2 = \frac{5}{3}x - \frac{10}{3}$
$+2 \qquad +2$

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

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

24. $(-3, 4)$
& vertical

$x = -3$



$x = -3$

25. $(4, 1)$
& horizontal

$y = 1$

$y = 1$