



## II. Graphing Lines

A. 2 options  $\rightarrow$  find slope & a point  
or find 2 pts

1. To find the slope & a point, you need to know the structure of the equation

#a.  $y = mx + b$

$$\left[ \begin{array}{l} m = \text{slope} \ \& \ b = \text{y-int} \\ \text{so pt: } (0, b) \end{array} \right]$$

#b.  $y - y_1 = m(x - x_1)$

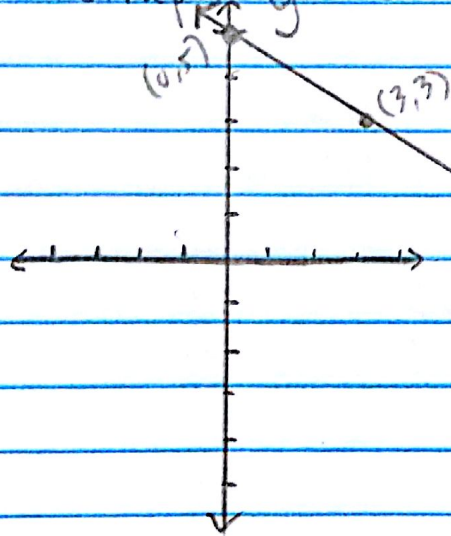
$$\left[ m = \text{slope} \ \& \ \text{pt} = (x_1, y_1) \right]$$

c.  $ax + by = c$

Solve for  $y$  & write

it  $y = mx + b$

ex 1 / Graph  $y = -\frac{2}{3}x + 5$



looks like  $y = mx + b$

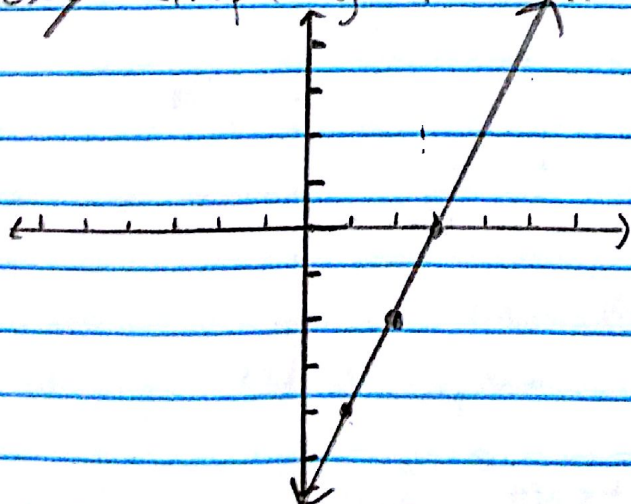
$$m = -\frac{2}{3} \quad \text{slope } \begin{array}{l} \text{2} \downarrow \\ \text{3} \rightarrow \end{array} \quad \text{OR} \quad \begin{array}{l} \text{2} \uparrow \\ \text{3} \leftarrow \end{array}$$

point:  $(0, 5)$  b/c  $b = 5$

(to find 2 pts, just plug in a value for  $x$  & solve for  $y$ )

$$y = -\frac{2}{3}(0) + 5 \rightarrow (0, 5) \quad y = -\frac{2}{3}(3) + 5$$
$$y = 5 \quad y = -2 + 5 = 3 \quad (3, 3)$$

ex 2 / Graph  $y + 4 = 2(x - 1)$



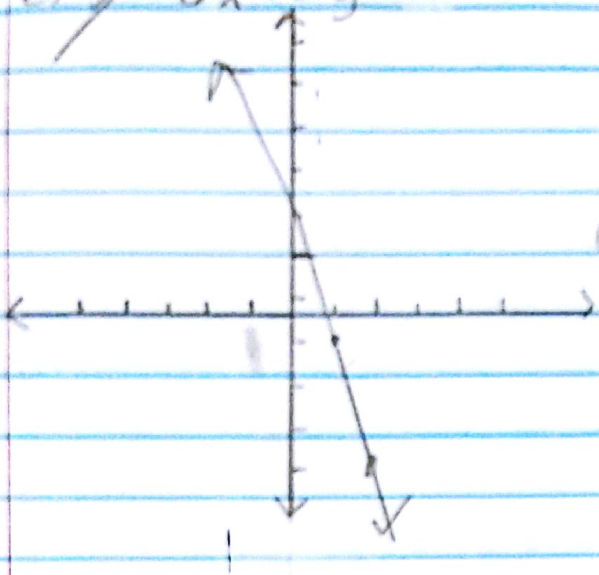
$$y - y_1 = m(x - x_1)$$

$$m = \frac{2 \uparrow}{1 \rightarrow} \quad \text{pt: } (1, -4)$$

(or plug & chug  
 $x$ 's of your  
choice)

ex 3/  $6x + 2y = 4$

To find 2 points, pick 2 x values



$x=1$

$6(1) + 2y = 4$

$6 + 2y = 4$

$2y = -2$

$y = -1$

$(1, -1)$

$x=2$

$6(2) + 2y = 4$

$12 + 2y = 4$

$2y = -8$

$y = -4$

$(2, -4)$

### III. Absolute Values

#### \*A. Solving Equations

1. get absol value on one side

2. Create 2 problems

same inside = - outside → same inside = + outside

3. solve both

ex/

$2|3x+6| = 18$

$|3x+6| = 9$

same

$3x+6 = -9$

$3x = -15$

$x = -5$

same

$3x+6 = +9$

$3x = 3$

$x = 1$

$x = \{-5, 1\}$

#### \*B. Solving Inequalities

1. get absol value on one side

2. Create 2 problems

same inside flip sign - outside same inside sign outside

ex/  $|abs| > +$

$abs < -$     $abs > +$

ex/  $|abs| > -$

$abs < +$     $abs > -$

ex/  $|4x+2|-3 > 7$

$|4x+2| > 10$

$4x+2 < -10$

$4x < -12$

$x < -3$

$4x+2 > 10$

$4x > 8$

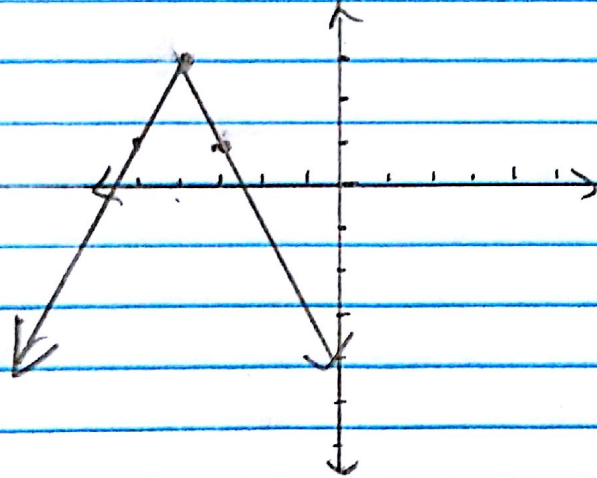
$x > 2$

$x < -3 \text{ or } x > 2$

\*C. Graphing (V-shaped when  $|abs|$ )  
 1. Use format  $y = a|x-h| + k$   
 where  $a$  is the "slope" &  $(h,k)$  is the corner

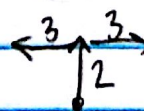
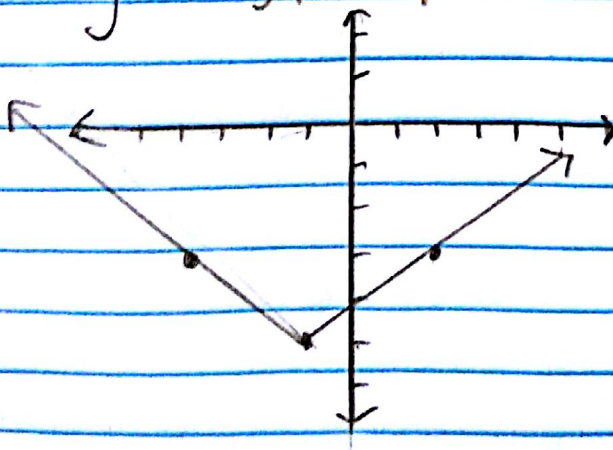
ex/  $f(x) = -2|x+4| + 3$

$a = -2$   $(h,k) = (-4, 3)$



ex/  $g(x) = \frac{2}{3}|x+1| - 5$

$a = \frac{2}{3}$   $(h,k) = (-1, -5)$



## IV. \* Determining Inverses

A. In an equation, switch  $x$  &  $y$

B. Solve for  $y$ .

ex/  $y = 5x - 4$  | becomes  $x = 5y - 4$

Inverse is

$$y = \frac{1}{5}x + \frac{4}{5}$$

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

$$\frac{1}{5}x + \frac{4}{5} = y$$

ex/  $y = \frac{3}{2}x + 6$

ex/  $6x + 12y = 24$