4.) $f(x) = x - 3$

$f(b+1) = b+1 - 3 = b - 2$

$g(x) = x^2 - 2x + 3$

$g(x-3) = (x-3)^2 - 2(x-3) + 3$

$(x-3)(x-3)$

$= x^2 - 3x - 3x + 9 - 2x + 6 + 3$

$= x^2 - 8x + 18$

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

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

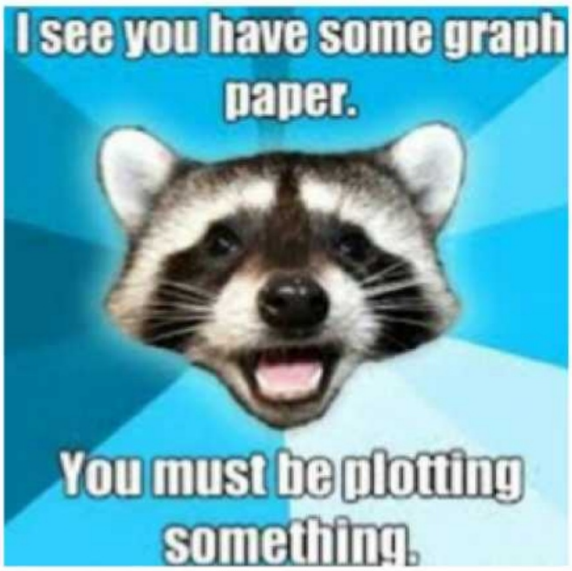
$$= -x^2 - 5$$

$$f(a-1) = -(a-1)^2 - 5$$

$$= -[a^2 - 2a + 1] - 5$$

$$= -a^2 + 2a - 1 - 5 = -a^2 + 2a - 6$$

Graphing Linear Functions/ Multiplying & Dividing Fractions



HW:

3 forms of linear functions

Slope-Intercept Form $y = mx + b$

Point-Slope form $y - y_1 = m(x - x_1)$

Standard Form: $Ax + By = C$

Graphing a line in slope-intercept form ($y = mx + b$)

1) Determine the y-intercept of the line, b. The coordinate is (0, b). Plot this point.

2) Determine the slope of the line, m.

3) From the y-intercept, use the slope to find your second point.

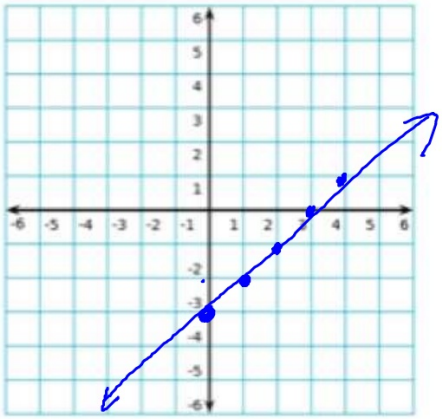
4) Connect the points.

ex: Sketch.

1) y = x - 3

$b = -3$

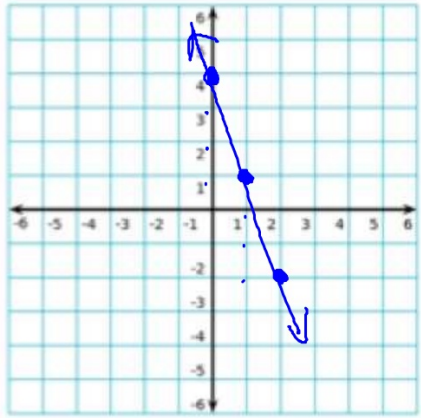
$m = \frac{1}{1}$



2) $y = -3x + 4$

$b = 4$

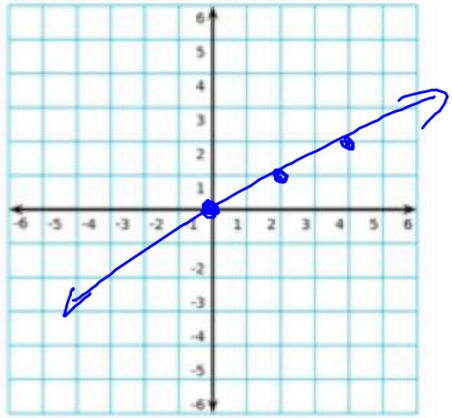
$m = -\frac{3}{1}$



3) $y = \frac{1}{2}x + 0$

$b = 0$

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

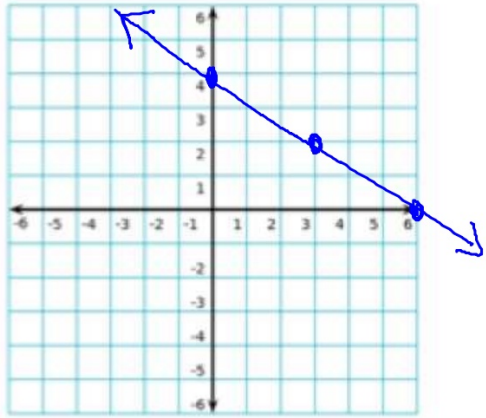


$m = \frac{\text{rise}}{\text{run}}$

4) $y = -\frac{2}{3}x + 4$

$b = 4$

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



Graphing a line in point-slope form:

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

1) Determine the point (x_1, y_1). Then plot this point.

2) Determine the slope, m. From the point plotted, use the slope to find your second point.

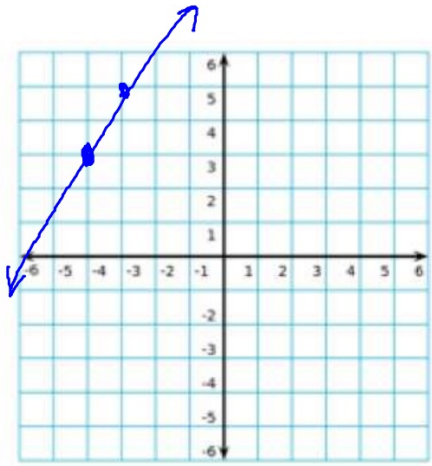
$y - y_1 = m(x - x_1)$

5) $y - 3 = 2(x + 4)$

point $(-4, 3)$

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

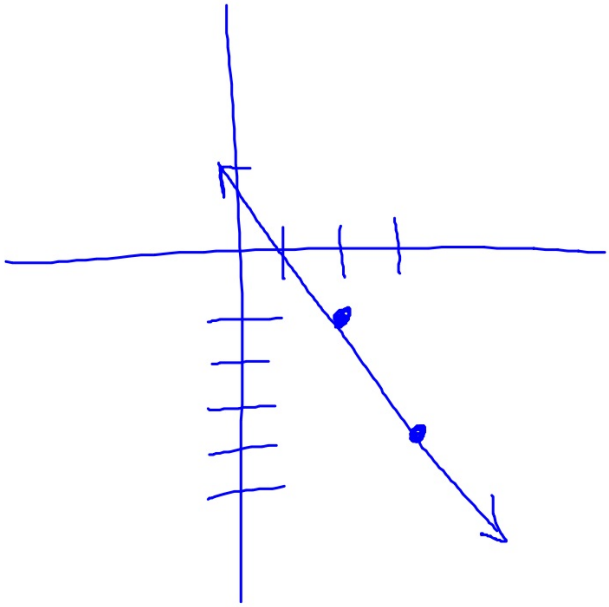
$y - 3 = 2(x - (-4))$



a) $y+1=-3(x-(2))$

point $(2,-1)$

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

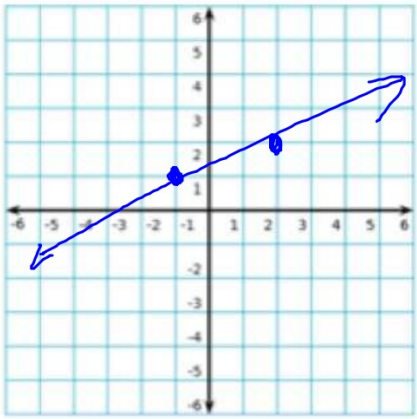


10.)

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

point $(-1, 1)$

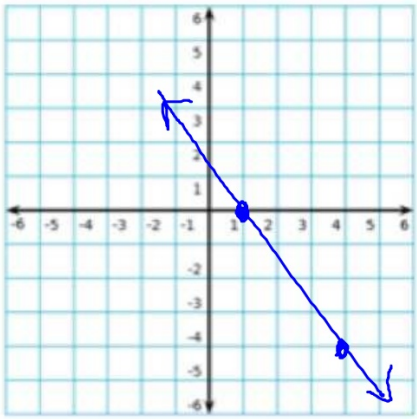
slope $= \frac{1}{3}$



7) $y = -\frac{4}{3}(x-1)$

point $(1, 0)$

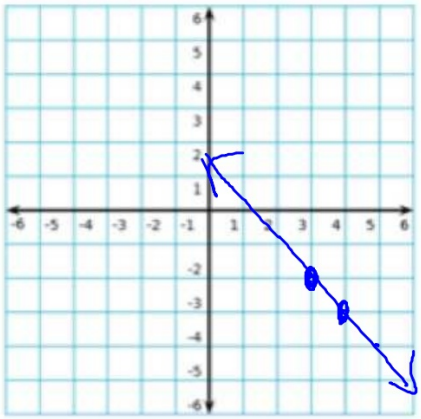
$m = -\frac{4}{3}$



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

12.) point $(3, -2)$

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



Graphing lines in standard form ($Ax + By = C$)

1) Find the **x-intercept:** let $y = 0$ and solve for x.

x-intercepts: $(x,0)$

2)Find the **y-intercept:** let $x = 0$ and solve for y.

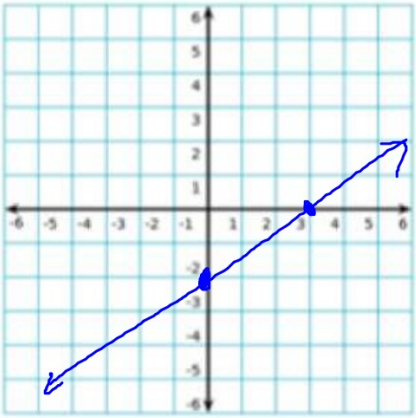
y-intercepts: $(0, y)$

3) Connect the points.

1.)

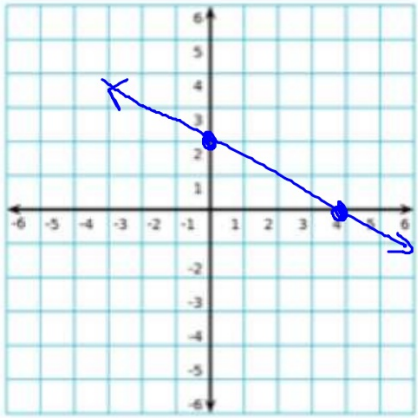
2) $2x - 3y = 6$

xint (y=0)	yint (x=0)
$2x = 6$	$-3y = 6$
$x = 3$	$y = -2$
$(3, 0)$	$(0, -2)$



2.) ~~10)~~ $x + 2y = 4$

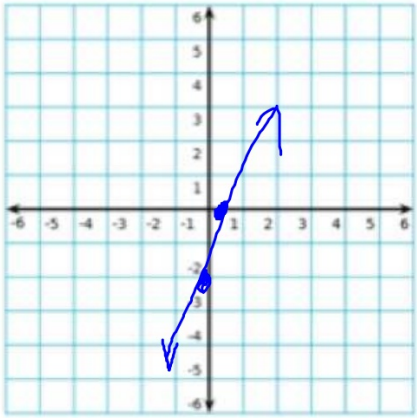
xint (y=0)	yint (x=0)
$x + 0 = 4$	$0 + 2y = 4$
$x = 4$	$y = 2$
$(4, 0)$	$(0, 2)$



3

~~11~~) $5x - y = 2$

xint (y=0)	yint (x=0
$\frac{5x}{5} + 0 = \frac{2}{5}$	$0 - y = 2$
$x = \frac{2}{5}$	$y = -2$



Review for quiz: Evaluating functions/ Function operations

ex: Evaluate.

$f(x)=\frac{3}{4}x-9$	$g(x)=-x^2-5x+1$	$h(x)=\lvert 9-4x\rvert$

1) $\cancel{f(8)}$ $f\left(\frac{8}{3}\right) = \frac{\cancel{3}}{4}\cdot\frac{8}{\cancel{3}}-9$

$= 2-9 = -7$

ex: Evaluate.

$f(x)=\frac{3}{4}x-9$	$g(x)=-x^2-5x+1$	$h(x)=\lvert 9-4x\rvert$

2) $\cancel{h\left(\frac{5}{2}\right)}$

$h(1.3) = \lvert 9-4\cdot 1.3\rvert$

$= \lvert 9-5.2\rvert = 3.8$

$$\begin{array}{r} 1.3 \\ \times\ 4 \\ \hline 5.2 \end{array} \qquad \begin{array}{r} 9.0 \\ -5.2 \\ \hline \end{array}$$

ex: Evaluate.

$f(x)=\frac{3}{4}x-9$	$g(x)=-x^2-5x+1$	$h(x)=\lvert 9-4x\rvert$

3) $g(-2) = -(-2)^2 - 5(-2) + 1$

$= -4 + 10 + 1$

$= 7$

ex: Evaluate.

$f(x) = 7x - 9$	$g(x) = -x^2 - 5x + 1$	$h(x) = 3x^2 + 5$

4) $g(x) - f(x)$

$(-x^2 - 5x + 1) - (7x - 9)$

$-x^2 - 12x + 10$

ex: Evaluate.

$f(x) = 7x - 9$	$g(x) = -x^2 - 5x + 1$	$h(x) = 3x^2 + 5$

5) $3f(x) + g(x)$

$3(7x-9) + (-x^2-5x+1)$

$21x - 27 - x^2 - 5x + 1$

$-x^2 + 16x - 26$

ex: Evaluate.

$f(x) = 7x - 9$	$g(x) = -x^2 - 5x + 1$	$h(x) = 3x^2 + 5$

6) $(f \bullet h)(x)$

$(7x-9)(3x^2+5)$

$21x^3 - 27x^2 + 35x - 45$

ex: Evaluate.

$f(x) = 7x - 9$	$g(x) = -x^2 - 5x + 1$	$h(x) = 3x^2 + 5$

7) $h(x+2)$

$3(x+2)^2 + 5$

$3(x^2 + 4x + 4) + 5$

$3x^2 + 12x + 17$

ex: Evaluate.

$f(x) = 7x - 9$	$g(x) = -x^2 - 5x + 1$	$h(x) = 3x^2 + 5$

8) $f(-1) - g(2)$

$-16 - (-13)$

-3

ex: Evaluate.

$f(x) = 7x - 9$	$g(x) = -x^2 - 5x + 1$	$h(x) = 3x^2 + 5$

9) $(f + h)(-2)$

$-23 + 17$

-6

ex: Evaluate.

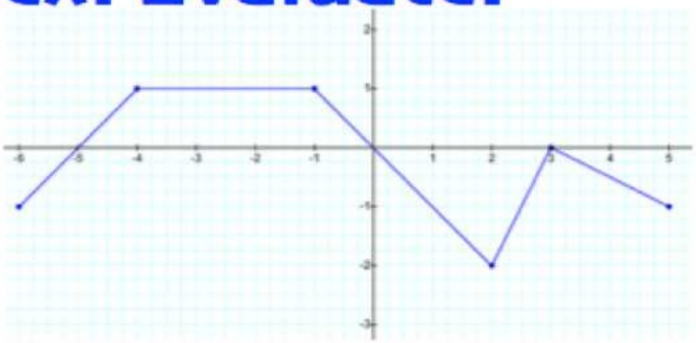
$f(x) = 7x - 9$	$g(x) = -x^2 - 5x + 1$	$h(x) = 3x^2 + 5$

10) $h(0) \cdot f\left(\frac{2}{7}\right)$

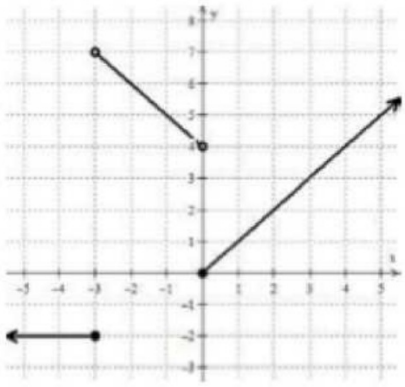
$(5)(-7)$

-35

ex: Evaluate.



f(x)



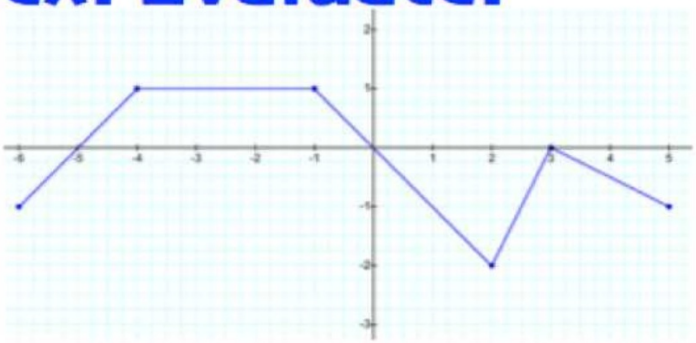
g(x)

11) f(2) - g(-3)

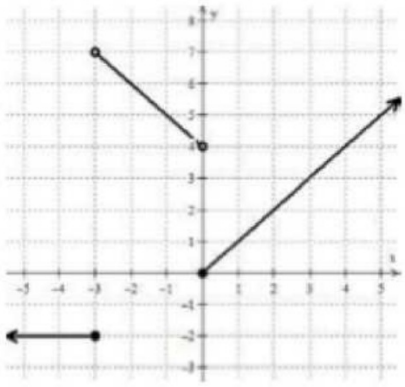
$(-2) - (-2)$

0

ex: Evaluate.



f(x)



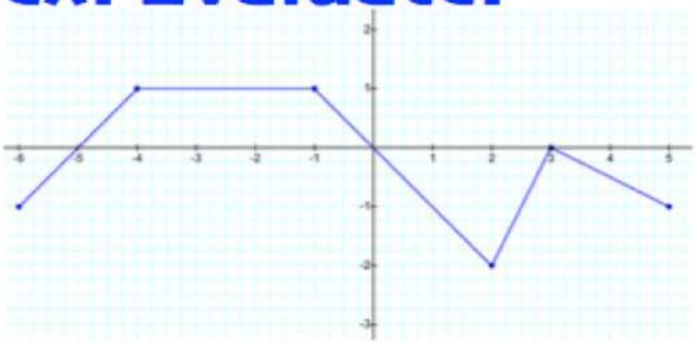
g(x)

12) $5g(-1) + 3f(5)$

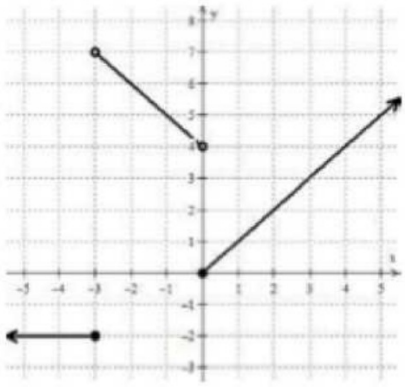
$5(5) + 3(-1)$

$25 - 3 = 22$

ex: Evaluate.



f(x)



g(x)

13) (g - f)(o)

0 - 0 = 0