5. Given that $f(x) = 7x - 5$ and $g(x) = -x^2 - 3x + 5$, determine and expression in simplest form to represent $f(2 - h + 3h^2) + 4g(3h + 1)$

$7(2-h+3h^2) - 5 + 4[-(3h+1)^2 - 3(3h+1) + 5]$

$14 - 7h + 21h^2 - 5 + 4[-(9h^2+6h+1) - 9h - 3 + 5]$

$9 - 7h + 21h^2 + 4(-9h^2 - 6h - 1 - 9h - 3 + 5)$

$9 - 7h + 21h^2 + 4(-9h^2 - 15h + 1)$

$9 - 7h + 21h^2 - 36h^2 - 60h + 4$

$= -15h^2 - 67h + 13$

$g(x) = 3 - 4x$ $\quad h(x) = x^2 + 2$

$g(3) =$ $\quad w(x) = 4 + x^2 - x$

Express in simplest form... $(-3+y)(-3+y)$

$g(y+2) - 3w(5y) + h(-3+y)$

$3 - 4(y+2) - 3[4 + (5y)^2 - (5y)] + (-3+y)^2 + 2$

$3 - 4y - 8 - 3(4 + 25y^2 - 5y) + (9 - 6y + y^2) + 2$

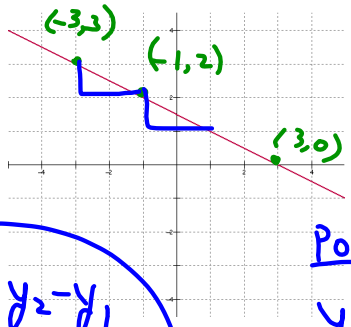
$3 - 4y - 8 - 12 - 75y^2 + 15y + 9 - 6y + y^2 + 2$

$$-74y^2 + 5y - 6$$

Functions continued... $y = mx + b$ (m: slope, b: y-Intercept) (x, y) Points on the graph

1. Determine the equation that describes each of the following:

(a)



$m = \frac{y_2 - y_1}{x_2 - x_1}$

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

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

(3,0)

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

$0 = -\frac{1}{2}(3) + b$

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

Point-Slope

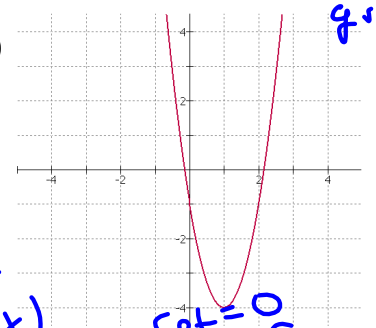
$y - y_1 = m(x - x_1)$

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

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

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

(b)



- Set = 0
- No fractions
- General

$\Rightarrow 2y = -x + 3$

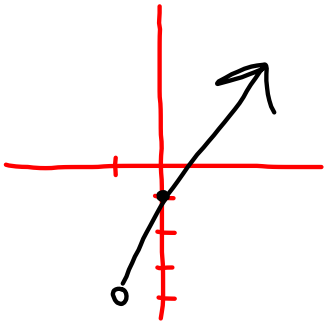
$x + 2y - 3 = 0$

2. Sketch each of the following:

a) $f(x) = 3x - 1\ ,\ x > -1,\ x \in R$

x	y
* -1	-4
0	-1

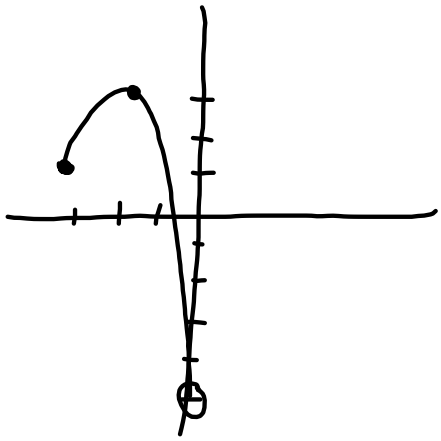
* Must determine coordinates at Boundaries



(b) $f(x) = -2(x+2)^2 + 3,\ -3 \le x < 0,\ x \in R$

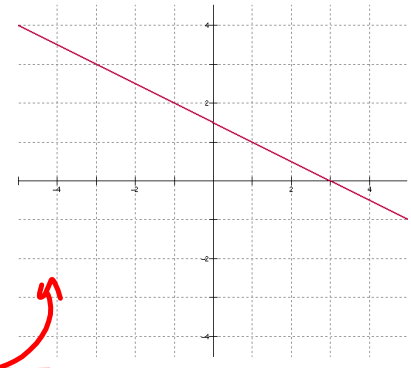
Vertex: (-2, 3)
S. Factor: 2
Opens Down

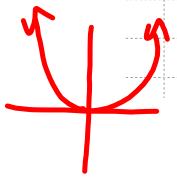
x	y
-3	1
0	-5



1. Determine the equation that describes each of the following:

(a)



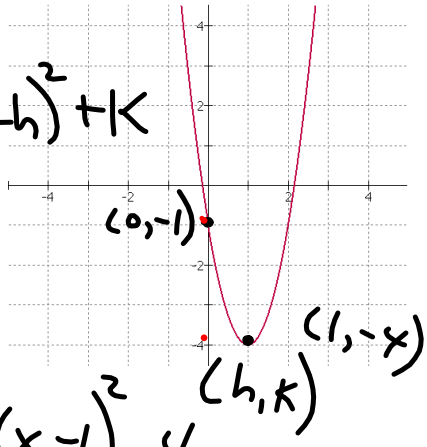


$y = x^2$

x	y
2	4
1	1
0	0
-1	1
-2	4

(b)

$y = a(x-h)^2 + k$



$y = a(x-1)^2 - 4$

$-1 = a(0-1)^2 - 4$

$3 = a(1)$

$a = 3$

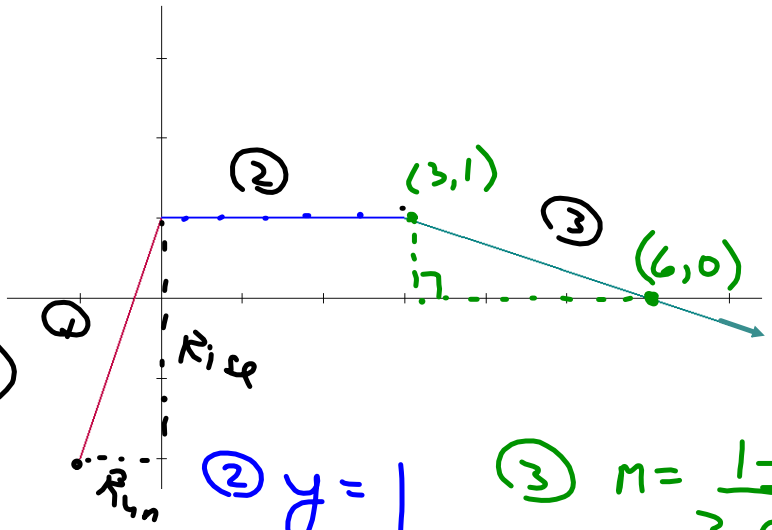
$$y = 3(x-1)^2 - 4$$

Quick Review of Functions

- What is a function?
- Domain and Range-----> Remember to look at restrictions on functions
- Function Notation
- How to check for a function (Table and Graph)

Let's head into a new direction...

What is the equation of the function that would describe the graph shown below???



$y = mx + b$

① $m = 3$

$b = 1$

$y = 3x + 1$

② $y = 1$

③ $m = \frac{1-0}{3-6} = -\frac{1}{3}$

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

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

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

$$y = \begin{cases} 3x+1, & -1 \leq x \leq 0 \\ \end{cases}$$

Attachments

4.1 Page 206 Questions.pdf

Introductory worksheet.doc

Worksheet - Simplifying Radicals (Square Roots).pdf

arithmetic and geometric sequences.doc

applications of sequences.doc