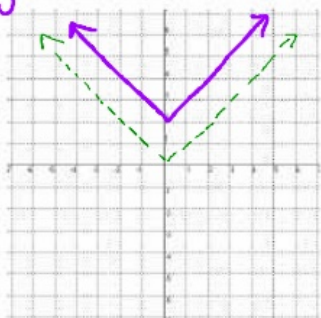


1. Identify each item and graph the equation:

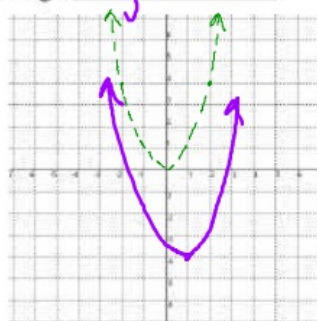
a)  $y = |x| + 2$

Parent:  $y = |x|$   
 Horizontal Shift: 0 L R  
 Vertical Shift: 2 U D  
 Domain:  $\mathbb{R}$   
 Range:  $y \geq 2$



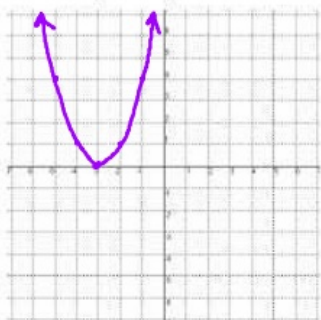
b)  $y = (x-1)^2 - 4$

Parent:  $y = x^2$   
 Horizontal Shift: 1 L R  
 Vertical Shift: 4 U D  
 Domain:  $\mathbb{R}$   
 Range:  $y \geq -4$



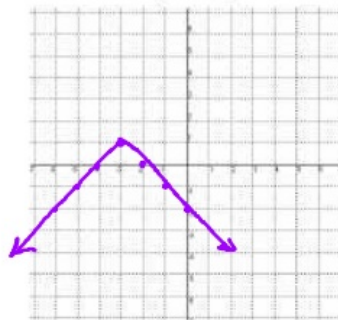
2. Graph each using the method of your choice, and identify the domain and range:

a)  $y = (x+4)^2$



D:  $\mathbb{R}$   
 R:  $y \geq 0$

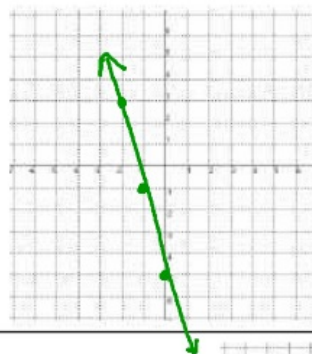
b)  $y = -|x+3| + 1$



D:  $\mathbb{R}$   
 R:  $y \leq 1$

3. Solve for y, then graph the equation:

$$\begin{aligned} -12x - 3y &= 15 \\ +12x & \quad +12x \\ \hline -3y &= 12x + 15 \\ \frac{-3y}{-3} &= \frac{12x + 15}{-3} & m = -4 \\ y &= -4x - 5 & b = -5 \end{aligned}$$

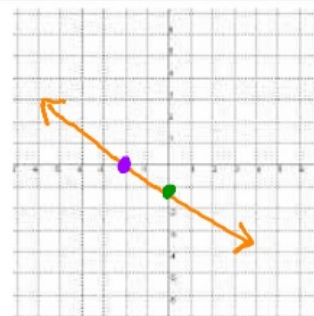


4. Identify the x and y intercepts, then graph:  $\frac{1}{2}x + y = -1$

x-int  
 $\frac{1}{2}x + (0) = -1$   
 $(2)\frac{1}{2}x = -1(2)$   
 $x = -2$

y-int  
 $\frac{1}{2}(0) + y = -1$   
 $y = -1$

x-intercept:  $(-2, 0)$   
 y-intercept:  $(0, -1)$



5. Find the domain:  $R = \{(-5, 3), (0, 7), (0, 9)\}$

Domain:  $\{-5, 0\}$

Is it a function? Why, or why not?

$R$  is not a function because there are duplicate  $x$  values

6. Find the domain of each function:

a)  $f(x) = \frac{x+5}{x}$

$\mathbb{R}$  except  $x \neq 0$

b)  $g(x) = \frac{x}{x+5}$

$\mathbb{R}$  except  $x \neq -5$

c)  $T(x) = -2x^2 + 4$

$\mathbb{R}$

d)  $M(t) = \frac{t-8}{(t+1)(t-4)}$

$\mathbb{R}$  except  $t \neq -1, 4$

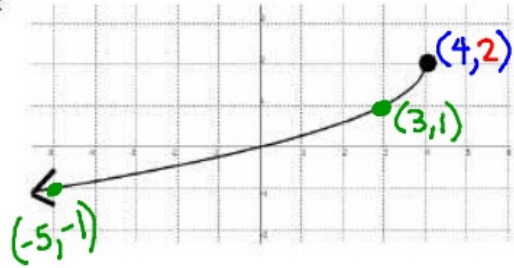
7. Answer the following questions given the graph of  $f(x)$ :

a) Domain:  $x \leq 4$

b) Range:  $y \leq 2$

c) Evaluate:  $f(-5) = -1$

d) Evaluate:  $f(3) = 1$



8. Find the indicated function values if:

$f(x) = -2x$

$g(x) = x^2 - 4$

$h(x) = 3x - 1$

a)  $f(-7) = -2(-7) = 14$

b)  $h(-5) = 3(-5) - 1 = -15 - 1 = -16$

c)  $f(h(3)) = -2(3(3) - 1) = -2(8) = -16$

d)  $h(h(0)) = 3(3(0) - 1) = 3(-1) = -3$

9. Function Operations:

$f(x) = -2x$

$g(x) = x^2 - 4$

$h(x) = x - 3$

$r(x) = x + 5$

Evaluate each of these:

a)  $f(g(x)) = -2(x^2 - 4) = -2x^2 + 8$

b)  $g(f(3)) = (-2(3))^2 - 4 = (-6)^2 - 4 = 32$

c)  $h(x) - f(x) = x - 3 - (-2x) = x - 3 + 2x = 3x - 3$

d)  $\frac{r(5)}{h(5)} = \frac{(5)+5}{(5)-3} = \frac{10}{2} = 5$

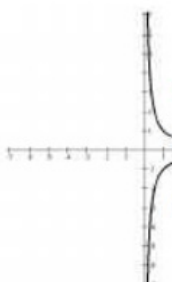
e)  $h(x) \cdot r(x) = (x-3)(x+5) = x^2 + 5x - 3x - 15 = x^2 + 2x - 15$

f)  $-2 \cdot g(5) = -2(5^2 - 4) = -2(25 - 4) = -2(21) = -42$

g)  $h(x) + 4f(x) = x - 3 + 4(-2x) = x - 3 - 8x = -7x - 3$

h)  $g(r(x)) = (x+5)^2 - 4 = (x+5)(x+5) - 4 = x^2 + 10x + 25 - 4 = x^2 + 10x + 21$

10. Determine if the graph shown below is a function. Why or why not?



The graph is not a function, because it does not pass the vertical line test

11. Write a function modeling the following situation:

There are 8 students at a math party, and 3 more show up every hour.

$S(h) = 8 + 3h$

or

$S(h) = 3h + 8$