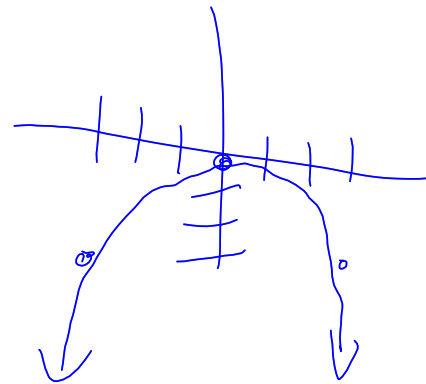


Bell Work:

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

x	-3	0	3
y	-3	0	-3



$$-\frac{1}{3}(-3)^2$$

$$-\frac{1}{3}(9) = -\frac{9}{3} = -3$$

$$\frac{1}{3}(0)^2$$

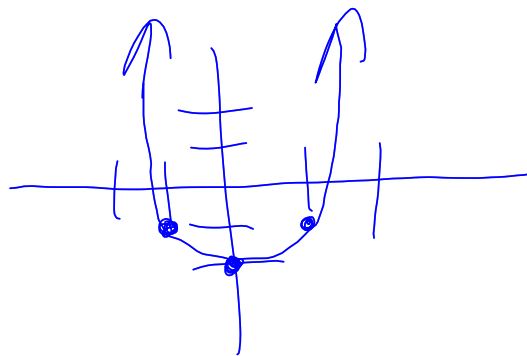
$$-\frac{1}{3}(3)^2$$

$$-\frac{1}{3}(9)$$

Graph each function.

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

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



$$(-1)^2 - 2$$

$$1 - 2 = -1$$

$$(0)^2 - 2$$

$$0 - 2 = -2$$

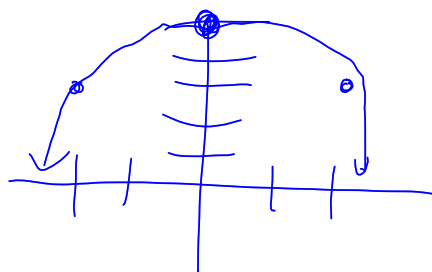
$$(1)^2 - 2$$

$$1 - 2 = -1$$

$f(x) =$ function of x
 $(-2)^2 = (-2)(-2)$

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

X	-2	0	2
Y	3	5	3



$$-\frac{1}{2}(-2)^2 + 5$$

$$-\frac{1}{2}(4) + 5$$

$$-2 + 5 = 3$$

$$-\frac{1}{2}(0)^2 + 5$$

$$0 + 5$$

$$-\frac{1}{2}(2)^2 + 5$$

$$-\frac{1}{2}(4) + 5$$

- 3) A relief organization flew over a village and dropped a package of food and medicine. The plane is flying at 1000 feet. The function $h = -16t^2 + 1000$ gives the package's height h above the ground (in feet) after t seconds. Graph the function. How many seconds does it take for the package to hit the ground?

t	0	2	11	5	7	8
h	1000	936	-936	600	216	-24

$$-16(2)^2 + 1000$$

$$-16(4) + 1000$$

$$-64 + 1000$$

$$936$$

$$-16(11)^2 + 1000$$

$$-16(121) + 1000$$

$$-1936 + 1000$$

$$-936$$

$$-16(5)^2 + 1000$$

$$-16(25) + 1000$$

$$-400 + 1000$$

$$-16(7)^2 + 1000$$

$$-16(49) + 1000$$

$$-784 + 1000$$

$$216$$

$$0 = -16t^2 + 1000$$

$$+16t^2 + 16t^2$$

$$16t^2 = 1000$$

$$t^2 = \frac{1000}{16}$$

$$t = \sqrt{62.5}$$

$$t = 7.9$$

Seconds

(D) Domain = x-values (R) Range = y-values
Identify the domain and range of each function.

4) $y = 5x^2 - 5$ ^{pos} ↗ ↗

D: All real #'s

R: $y \geq -5$

5) $y = -\frac{1}{2}x^2 + 3$ ^{neg} ↘ ↘

D: All real #'s

R: $y \leq 3$

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

D: all real #'s
 $y \geq -2$

7) $f(x) = -9x^2 + 1$

D: all real #'s
 $y \leq 1$