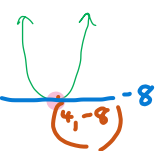


1. Determine the domain and range of each quadratic function:

$$f(x) = 3(x-4)^2 - 8$$

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

$$V(h, k) = (4, -8)$$



$$D = \{x \in \mathbb{R}\}$$

$$R = \{f(x) \in \mathbb{R} \mid f(x) \geq -8\}$$

$$f(x) = 3x^2 - 8x - 7, \text{ where } x \geq 0.$$

$$f(x) = 3(x^2 - 2.7x) - 7$$

$$f(x) = 3\left(x^2 - 2.7x + (1.35)^2 - (1.35)^2\right) - 7$$

$$\frac{2 \cdot 7}{2} = 1.35$$

$$\pm (1.35)^2$$

$$f(x) = 3\left((x - 1.35)^2 - 1.8225\right) - 7$$

$$f(x) = 3(x - 1.35)^2 - 5.47 - 7$$

$$f(x) = 3(x - 1.35)^2 - 12.47 \quad V = (1.35, -12.47)$$

$$D = \{x \in \mathbb{R}\} ; R = \{f(x) \in \mathbb{R} \mid f(x) \geq -12.47\}$$

2. State the transformations, determine the
- domain
- and
- range
- , create the table of values and sketch the graph.

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

$$f(x) = -2(x+4)^2 + 6$$

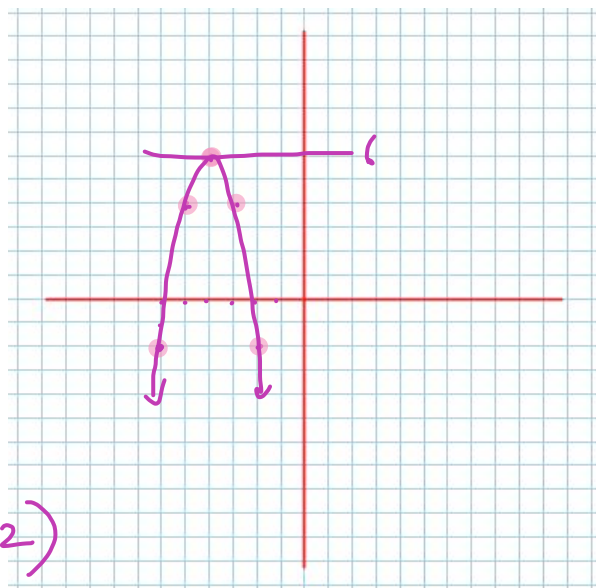
$a = -2$ OPENS DOWN, V. STRETCH

$h = -4$ H. SHIFT LEFT

$k = 6$ V. SHIFT UP

x	x^2
-2	4
-1	1
0	0
1	1
2	4

$x-h$	$a(x-h)^2 + k$
-6	-24 + 6 = -18
-5	-10 + 6 = -4
-4	-2 + 6 = 4
-3	-6 + 6 = 0
-2	-8 + 6 = -2



$$D = \{x \in \mathbb{R}\}$$

$$R = \{f(x) \in \mathbb{R} \mid f(x) \leq 6\}$$