

TRANSFORMATION RULES

Move up c units $f(x) + c$

Move down c units $f(x) - c$

Move left c units $f(x+c)$

Move right c units $f(x-c)$

flip over x -axis $-f(x)$

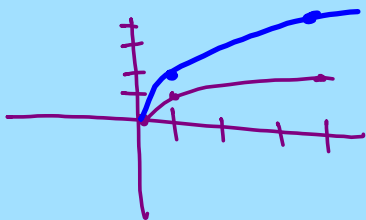
flip over y -axis $f(-x)$

vertical stretch/shrink $y = af(x)$

$y = f(ax)$

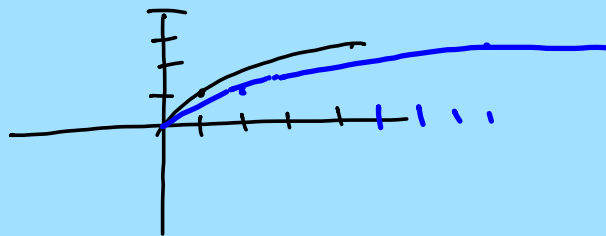
$$y = 2\sqrt{x}$$

0	0
1	2
4	4
9	6



$$y = \sqrt{2x}$$

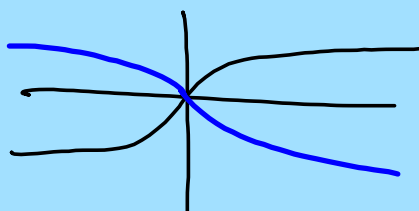
0	0
2	1
8	2
18	3



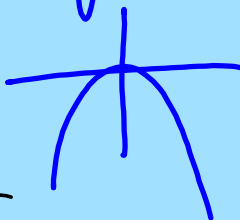
$$y = x^3 - 4\sqrt[3]{x} - \log_7 x$$

$$y = (x-2)^3 - 4\sqrt[3]{x-2} - \log_7(x-2)$$

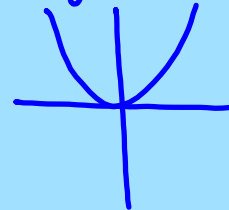
$$f(x) = \frac{-\sqrt[3]{x}}{\sqrt{-x}}$$



$$y = -x^2$$



$$y = (-x)^2$$



$$f(x) = \begin{cases} 2x^2 + 24x + 71 & x \leq -4 \\ -|x+2| + 5 & -4 < x < 3 \\ \sqrt{6-x} & x \geq 3 \end{cases}$$

$$\begin{array}{r|l} 0 & 0 \\ 1 & 1 \\ 4 & 2 \end{array}$$

Vertex of a parabola:

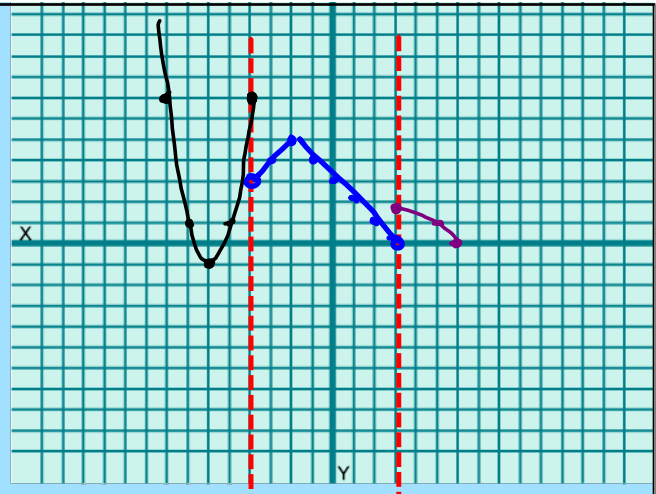
$$ax^2 + bx + c$$

$$x = -\frac{b}{2a} = -\frac{24}{2(2)} = -6$$

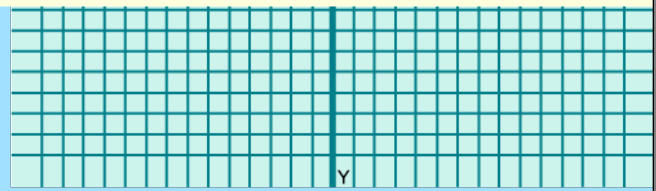
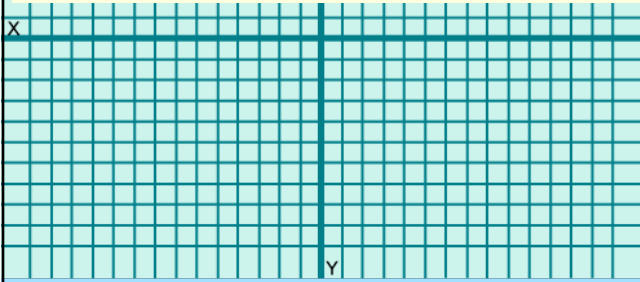
y = sub in x-coord.

$$2(-6)^2 + 24(-6) + 71$$

$$72 - 144 + 71 = -1$$



$$\begin{array}{r|l} 0 & 0 \\ 2 & 4 \\ 3 & 9 \end{array}$$



$$y = 2|x-5| - 3$$

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

$$\begin{aligned} 2(x-5) - 3 &= 2x - 10 - 3 \\ &= 2x - 13 \\ -2(x-5) - 3 &= -2x + 10 - 3 \\ &= -2x + 7 \end{aligned}$$

