



Analyzing a Quadratic Function

Stretch Value	2	1	1	2
Coordinates of Vertex	(1, 5)	(-1, -9)	(2, -6)	(-4, 2)
Reflection (yes/no)	No	No	No	No
Concave (up / down)	up	up	up	up
Horizontal translation	1	-1	2	-4
Vertical translation	5	-9	-6	2
Equation of Min/Max	$y = 5$	$y = -9$	$y = -6$	$y = 2$
Y intercept	(0, 7)	(0, -8)	(0, -2)	(0, 34)
Domain	$\{x \in \mathbb{R}\}$	$\{x \in \mathbb{R}\}$	$\{x \in \mathbb{R}\}$	$\{x \in \mathbb{R}\}$
Range	$\{y \geq 5; y \in \mathbb{R}\}$	$\{y \leq -9; y \in \mathbb{R}\}$	$\{y \geq -6; y \in \mathbb{R}\}$	$\{y \geq 2; y \in \mathbb{R}\}$
Equation of axis of symmetry	$x = 1$	$x = -1$	$x = 2$	$x = -4$
Roots	$x = 1 \pm \frac{i\sqrt{10}}{2}$	$x = -4; 2$	$x = 2 \pm \sqrt{6}$	$x = -4 \pm i$
Mapping Rule	$(x, y) \rightarrow (x+1; 2y+5)$	$(x, y) \rightarrow (x-1; y-9)$	$(x, y) \rightarrow (x+2; y-6)$	$(x, y) \rightarrow (x-4; 2y+2)$
Transformational form	$\frac{1}{2}(y-5) = (x-1)^2$	$(y+9) = (x+1)^2$	$y+6 = (x-2)^2$	$\frac{1}{2}(y-2) = (x+4)^2$
Standard Form	$y = 2(x-1)^2 + 5$	$y = (x+1)^2 - 9$	$y = (x-2)^2 - 6$	$y = 2(x+4)^2 + 2$
General form	$2x^2 - 4x + 7 = 0$	$y = x^2 + 2x - 8$	$y = x^2 - 4x - 2$	$y = 2x^2 + 16x + 34$
Sketch				