

7.6 Vertex Form of a Quadratic Function

Recall: Range: _____

Domain: _____

Axis of Symmetry: _____

Vertex: _____

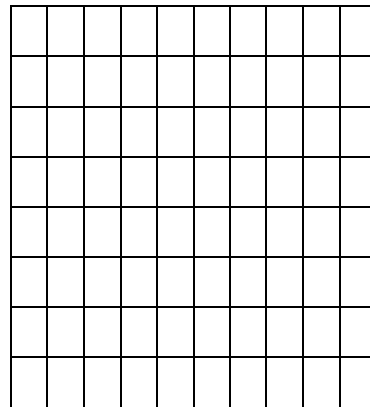
Using your graphing calculator, graph $y = x^2$. Sketch and state:

Equation of Axis of Symmetry

Vertex

Domain

Range



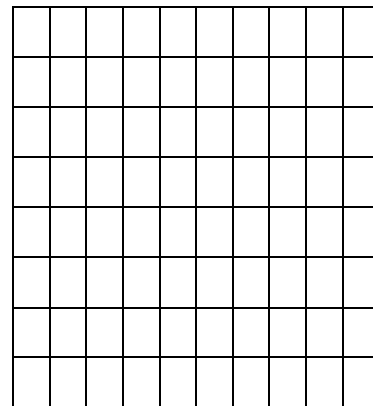
Vertical Translations $y = x^2 + k$

Using your graphing calculator, graph:

a) $y = x^2 + 2$

b) $y = x^2 - 4$, Sketch and state:

	$y = x^2 + 2$	$y = x^2 - 4$
Axis of Symmetry		
Vertex		
Domain		
Range		



Vertical Translations Summary:

Horizontal Translations $y = (x-h)^2$

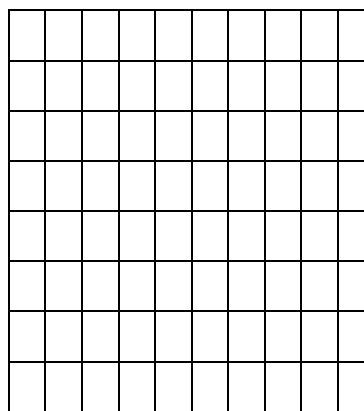
Using your graphing calculator, graph:

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

b) $y = (x + 1)^2$

Sketch and state:

	$y = (x - 2)^2$	$y = (x + 1)^2$
Axis of Symmetry		
Vertex		
Domain		
Range		

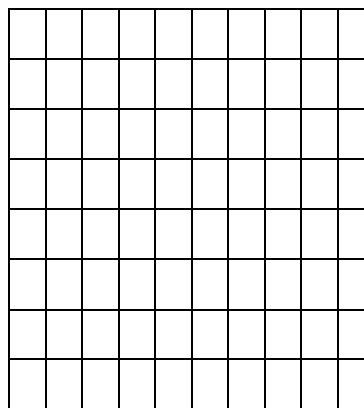


Horizontal Translations Summary:

Vertical & Horizontal Translations $y = (x - h)^2 + k$

WITHOUT using your graphing calculator, sketch $y = (x+3)^2 - 1$ and state:

Axis of Symmetry	
Vertex	
Domain	
Range	



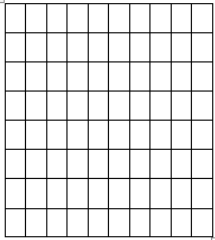
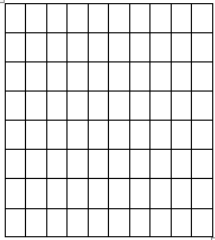
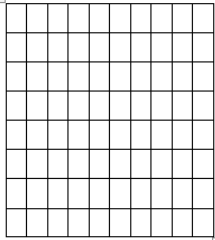
Dilations $y = ax^2$

Using your graphing calculator, graph:

a) $y = 2x^2$

b) $y = \frac{1}{2}x^2$

c) $y = -x^2$ Sketch and state:

	$y = 2x^2$	$y = \frac{1}{2}x^2$	$y = -x^2$
Sketch			
Axis of Symmetry			
Vertex			
Domain			
Range			

Dilations Summary:

WITHOUT using your calculator, sketch $y = 2(x - 1)^2$ and state:

Axis of symmetry:

Vertex:

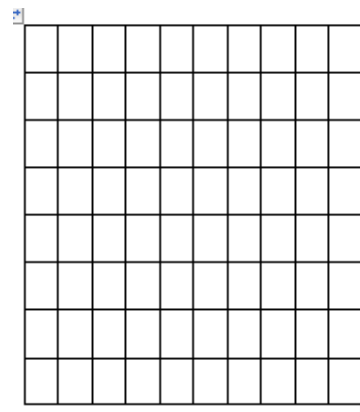
Domain:

Range:

y-intercept:

x-intercept

Direction of opening:



Vertex Form of a Quadratic Function: $y = a(x - h)^2 + k$

Axis of symmetry:

Vertex:

Domain:

Range:

y-intercept:

x-intercept

Direction of opening:

How many roots?

State 2 possible values for the unknown parameter given the required number of x-intercepts:

a) $y = a(x - 2)^2 + 1$: 2 x-intercepts d) $y = a(x - 5)^2 - 1$: 0 x-intercepts

b) $y = 3(x - 2)^2 + k$: 1 x-intercept e) $y = -2(x - 3)^2 + k$: 2 x-intercepts

c) $y = (x - 2)^2 + k$: 0 x-intercepts f) $y = 5(x - h)^2$: 2 x-intercepts