

Quadratic Function

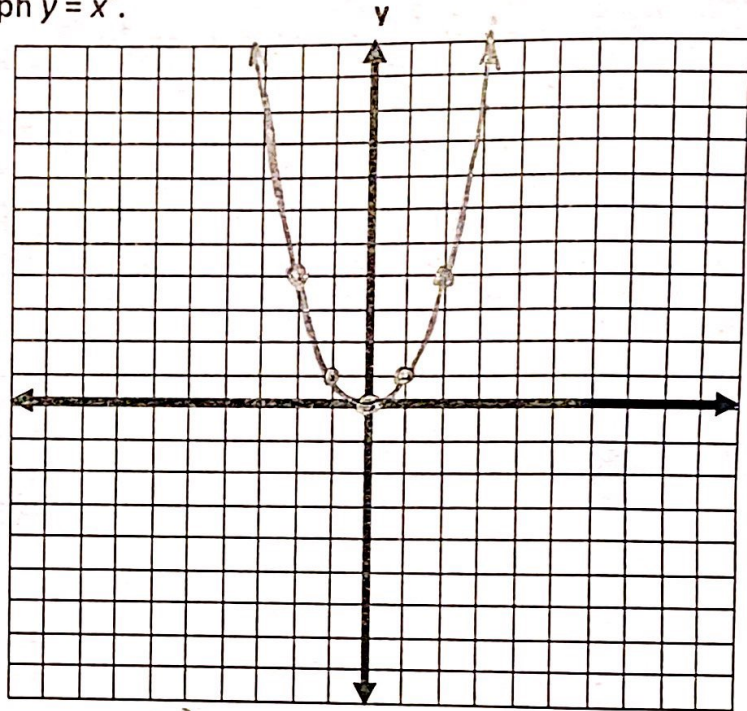
$f(x) = x^2$

Transformations - Quadratic

The graph of a quadratic function is called a parabola.

Use a table of values to graph $y = x^2$.

x	$f(x) = x^2$	y	(x, y)
-2	$(-2)^2$	4	(-2, 4)
-1	$(-1)^2$	1	(-1, 1)
0	$(0)^2$	0	(0, 0)
1	$(1)^2$	1	(1, 1)
2	$(2)^2$	4	(2, 4)



Identify the domain of the graph.

$(-\infty, \infty)$

Identify the range of the graph.

$[0, \infty)$

Does the graph have a max/min?

$(0, 0)$

Describe the end behavior of the graph.

as $x \rightarrow \infty$ $f(x) \rightarrow \infty$

as $x \rightarrow -\infty$ $f(x) \rightarrow \infty$

What are the zeros of the function?

$(0, 0)$

What is the y-intercept of the function?

$(0, 0)$

How can you tell this is a quadratic function?

algebraically:
 $y = x^2$
 exponent is two

graphically:
 it's a parabola

How could this graph be shifted up or down?

$f(x) = x^2 + 2$
 ↑
 up 2

$f(x) = x^2 - 1$
 ↑
 down 1

How could this graph be shifted left or right?

$f(x) = (x - 1)^2$
 ↑
 right 1

$f(x) = (x + 2)^2$
 ↑
 left 2