

4.1 to post and fill

Monday, November 25, 2019 8:27 AM



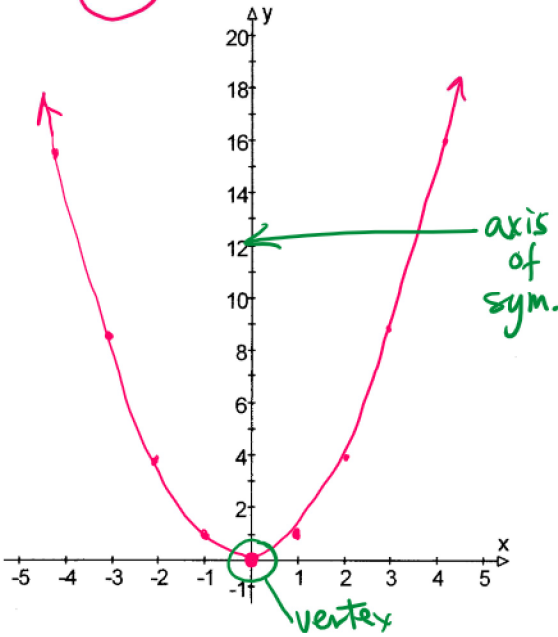
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4.1 Properties of a Quadratic Function

$f(x)$ is function notation

$f(x) = ax^2 + bx + c$, $a \neq 0$, $a, b, c \in \mathbb{R}$, is the general form of a **quadratic function**. The word quadratic comes from the Latin "quadratum" meaning square. The degree is two because the highest power is two. The graph is a parabola.

Graph $y = x^2$ on the graph provided by completing the table of values.



x	y = x^2
0	0
1	1
-1	1
2	4
-2	4
3	9
-3	9
4	16
-4	16

Terms

for this example

Vertex:	highest or lowest point	$(0, 0)$
Direction of opening:	up or down	up
Axis of symmetry:	imaginary line that cuts the picture into two equal halves	$x = 0$
Minimum/Maximum:	min \uparrow lowest point max \downarrow highest point } refers to y value of vertex	min $y = 0$
Intercepts:	x -int. \rightarrow subst $y = 0$ (could be 0, 1 or 2) y -int \rightarrow subst $x = 0$ ($ax^2 + bx + c \rightarrow y_{int} = c$)	$x = 0$ $y = 0$
Domain:	x values	ALWAYS $\rightarrow x \in \mathbb{R}$
Range:	y values opens up $\rightarrow y \geq \square$ down $\rightarrow y \leq \square$	$y \geq 0$

p 277 # 4, 5, 8 ab, 10 (choose 2), 11

reality

x belongs to real #'s