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Thursday, March 03, 2016 5:05 PM

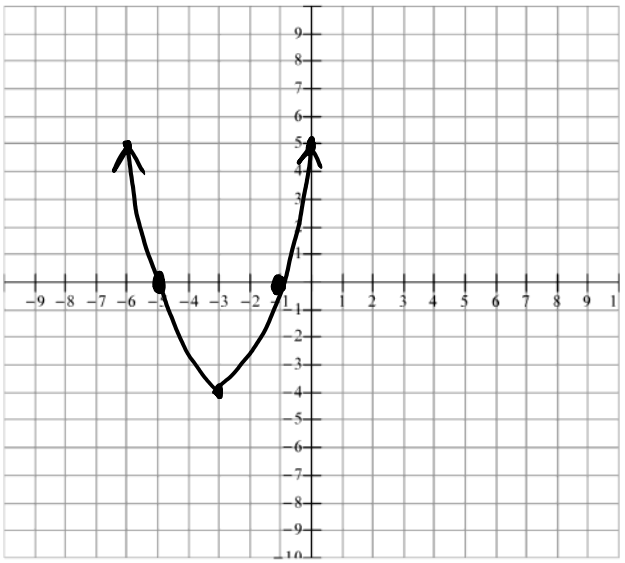
3.2 Quadratic Functions in Standard Form

$y = a(x-p)^2 + q$

The standard form of a quadratic function is:

e.g. $y = Ax^2 + Bx + C$

Ex. #1: Use a table of values to sketch the graph of $y = x^2 + 6x + 5$ and answer the following questions.



Vertex: $(-3, -4)$

Axis of symmetry: $x = -3$

Direction of Opening: up

Max or Min: $y = -4$

Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid y \geq -4, y \in \mathbb{R}\}$

$x^2 + 6x + 5$

x	y
0	$0^2 + 6(0) + 5 = 5$
-3	$(-3)^2 + 6(-3) + 5$ $= 9 - 18 + 5 = -4$
-1	$(-1)^2 + 6(-1) + 5$ $= 1 - 6 + 5 = 0$

vertex = ?

$x_{max/min} = -\frac{b}{2a}$

$= \frac{-6}{2(1)} = -3$

Ex. #2: Which functions are quadratic?

(a) $y = (x - 2)(2x + 5)$

$= 2x^2 + 5x - 4x - 10$

$= 2x^2 + x - 10$

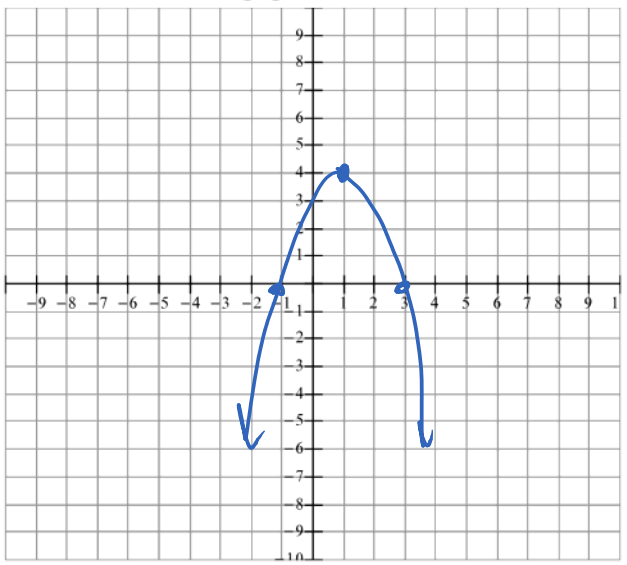
(b) $f(x) = 2x - 3$

degree $= 1$

$y = mx + b$

$Ax^2 + Bx + C$ $\quad C = -10$

Ex. #3: Use a graphing calculator to sketch the graph of $y = -x^2 + 2x + 3$ and answer the following questions.



Vertex: $(1, 4)$

Axis of symmetry: $x = 1$

Direction of Opening: down

Max or Min: $y = 4$

Domain: $\{x \mid x \in \mathbb{R}\}$

Range: $\{y \mid y \leq 4, y \in \mathbb{R}\}$

H/W: Pg: 174 1-3

4a, d

6

7

10 → Focus on Symmetry