

Chapter 2

Polynomials

$$D: (-\infty, \infty)$$

Smooth turns ; no sharp turns

Polynomial	Not a Polynomial
$5x^3 - 8x + 1$	$\sqrt{x^2 + 5}$
$-x - 6$	$\frac{2}{x - 3}$
-3	$ 7x $

$$9x^{-3} + 4$$

Degree of a Polynomial



Leading Coefficient



Standard Form



1.) $f(x) = 8x^5 - 3x^4 - x^2 + 5$

Standard Form: $8x^5 - 3x^4 - x^2 + 5$

Degree: 5

LC: 8

2.) $g(x) = 9 - x^2 + x - 2x^3$

Standard Form: $-2x^3 - x^2 + x + 9$

Degree: 3

LC: -2

Write an equation for the linear function f if

$$f(4) = -2 \quad \text{and} \quad f(7) = 4$$

$$y = mx + b$$

↑
Slope y-int.

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$y = 2x - 10$$

$$y - y_1 = m(x - x_1)$$

(4, -2), (7, 4)

$$m = \frac{4 - (-2)}{7 - 4} = \frac{6}{3} = 2$$

$$y = mx + b$$

$$-2 = 2(4) + b$$

$$-2 = 8 + b$$

$$-10 = b$$

Quadratic Functions

Standard Form

$$f(x) = ax^2 + bx + c$$

$$\text{Vertex: } \left(\frac{-b}{2a}, f\left(\frac{-b}{2a}\right) \right)$$

$$\text{Axis of Symmetry: } x = \frac{-b}{2a}$$

Vertex Form

$$f(x) = a(x - h)^2 + k$$

$$\text{Vertex: } (h, k)$$

$$\text{Axis of Symmetry: } x = h$$

Homework

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