7.1 Introduction to Polynomials

Obj: 1. Identify, evaluate, add, and subtract polynomials.

2. Classify polynomials & describe the shape of their graph.

monomial: one term x^2

degree of a monomial: sum of exponents

$x^2 \cdot y^4 \rightarrow$ deg: 6

$3 \cdot x^0 \rightarrow$ deg 0

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polynomial: a monomial or sum of terms that are monomials.

$x^2 + 2x + 4$

deg 2

binomial: 2 terms

trinomial: 3 terms

degree of a polynomial: highest exponent

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Degree	Name	Example
$n=0$	Constant	3
$n=1$	Linear	$x+2$
$n=2$	Quadratic	x^2+6x-4
$n=3$	Cubic	$4x^3$
$n=4$	Quartic	$2x^4-6x^2+x+1$
$n=5$	Quintic	$3x^5-2$

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Classify by degree & # of terms:

$2x^3-3x+4x^5$

Quintic trinomial

$2x^3+3x^4+2x^3+5 = 3x^4+5$

Quartic binomial

$x^2+4-8x-2x^3$

Cubic polynomial

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Find the sum:

$(-2x^2 - 3x^3 + 5x + 4) + (-2x^3 + 7x - 6)$

$-5x^3 - 2x^2 + 12x - 2$

Standard form: start w/ highest exponent & work down.

$(2x^4 + 4x^3 + 5x - 2) + (-2x^4 - 7x^2 + 8x - 10)$

$4x^3 - 7x^2 + 13x - 12$

cubic polynomial

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$(-6x^3 - 6x^2 + 7x - 1) - (3x^3 - 5x^2 - 2x + 8)$

$-6x^3 - 6x^2 + 7x - 1 - 3x^3 + 5x^2 + 2x - 8$

$-9x^3 - x^2 + 9x - 9$

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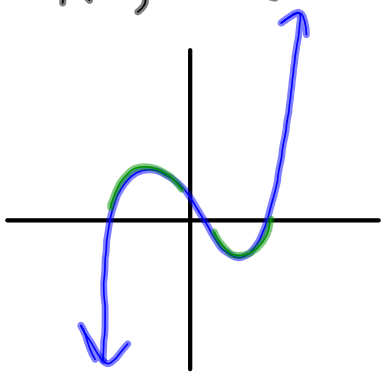
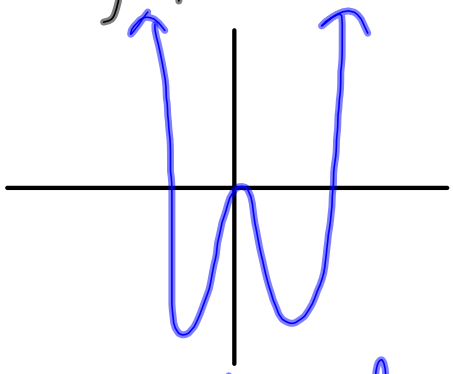
Graph. Describe the shape.

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



S shaped
2 u turns

$g(x) = x^4 - 8x^2$



W Shaped
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