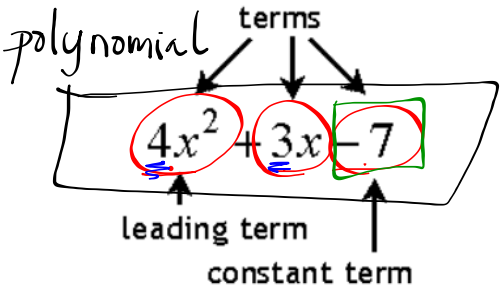
Algebra 1 Unit 7: Quadratic Expressions Notes

Day 1 – Classifying Polynomials

A **POLYNOMIAL** is a mathematical expression consisting of terms, which can include a constant, variable, or product of a constant and variable, that are connected together using addition or subtraction. Variables must have exponents raised to whole number exponents.



Number of Terms: 3

Terms: $4x^2, 3x, -7$

Coefficient(s): 4, 3

Constant(s): −7

Polynomials CANNOT contain:
- Radicals
- Fractional exponents
- Negative exponents
- No variables in the denominator

Cross off all expressions that are NOT polynomials:

$-8x^5 + 2x - 7$ $6x^{-2} - 3x$ $\frac{1}{x^3}$ $3x^4 - \sqrt{x}$ $-9 + x$ $4x^2$

Polynomials are typically written in **STANDARD FORM**, which means the terms are arranged in decreasing order from the largest exponent to the smallest exponent. When you write polynomials in standard form, you can easily identify the degree of the polynomial. The **DEGREE** is the largest exponent of the variable in the polynomial.

"ducks in a row"

Rewrite each polynomial in standard form. Then identify the degree of the polynomial:

a. $5x - 6x^2 - 4$

Standard Form: $-6x^2 + 5x - 4$

Degree: 2

b. $-7x + 8x^2 - 2 - 8x^2$

* CLT

Standard Form: $-7x - 2$

Degree: 1

c. $6(x-1) - 4(3x^2) - x^2$

$6x - 6 - 12x^2 - x^2$ CLT

$6x - 6 - 13x^2$

Standard Form: $-13x^2 + 6x - 6$

Degree: 2

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Classifying Polynomials

Polynomials are classified by **DEGREE** and **NUMBER OF TERMS**:

Degrees = largest exponent

# of terms = → degrees don't matter separated by +/−

Degree	Name	Example
0	constant	$-1 = -1x^0$
1	linear	$2x = 2x^1$
2	quadratic	$2x^2$
3	cubic	$25x^3$

Terms	Name	Example
1	monomial	$3x$
2	binomial	$24x+10$
3	trinomial	$27x^2+15x-2508$
4+	polynomial	x^3+2x^2+x-5

Complete the table below. Simplify the expressions or put in standard form if necessary.

Polynomial	Degree	# of Terms	Classification
$8x$	1	1	linear monomial
x^2-4	2	2	quadratic binomial
10	0	1	constant monomial
$-24+3x-x^2$ → $-x^2+3x-24$	2	3	quadratic trinomial
$5x^3-12+8$ → $5x^3-4$	3	2	cubic binomial
$7x-9x+1$ → $-2x+1$	1	2	linear binomial
$4x^2-5x^3-4+5x-1$ → $4x-5x^3-5+5x$ → $-5x^3+4x^2+5x-5$	3	4	cubic polynomial
$2x+3-7x^2+4x+7x^2$ → $6x+3+7x^2-7x^2$ → $6x+3$	1	2	linear binomial