

$$2x + 7x - 11 = 0$$

C+S
QF

Algebra 2

5-1 Polynomial Functions

Name Key Date _____ A#1

- Goals:** a. To classify polynomials
b. To graph polynomial functions and describe end behavior

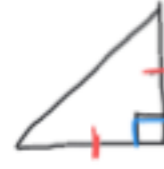
Warm Up: Rewrite each quadratic in standard form. What are the characteristics of standard form?

a. $9x^2$

$-x^2 + 9$

b. $5x + 4x^2 - 7$

$4x^2 + 5x - 7$



right
isosceles

Arrange the terms by value of the exponent in descending order

separated by + or -
x-9

| Classify by Degree | | Example | Classify by Number of Terms | |
|--------------------|-------------------|------------------------|-----------------------------|------------------|
| Degree | Name using Degree | | Number of Terms | Name Using Terms |
| 0 | constant | -9 | 1 | monomial |
| 1 | linear | $x - 8$ | 2 | binomial |
| 2 | quadratic | $3x^2 + 6x - 1$ | 3 | trinomial |
| 3 | cubic | $-3x^3$ | 1 | monomial |
| 4 | quartic | $x^4 - 9$ | 2 | binomial |
| 5 | quintic | $x^5 + 4x^3 - x^2 - 6$ | 4 | polynomial |

Standard form of Polynomials

The standard form of a polynomial function arranges the terms by degree in descending numerical order.

A polynomial function $P(x)$ in standard form is

$$P(x) = a_n x^n + a_{n-1} x^{n-1} + \dots + a_1 x + a_0$$

where n is a nonnegative integer and a_n, \dots, a_0 are real numbers.

$$P(x) = 4x^5 + 3x^2 + 5x - 20$$

Cubic term

Quadratic term

Linear term

Constant term

Practice: Rewrite each polynomial in standard form. Classify each polynomial by degree and number of terms.

a. $\frac{2}{3}$

b. $3x + x^4 + 1$

$x^4 + 3x + 1$

Constant
monomial

Quartic trinomial

Cubic Binomial

c. $6 - x^3$

$-x^3 + 6$

Quintic binomial

d. $4x^5 - 8x$