

Warm UP

Identify each the form in which the quadratic functions below are written.

1. $2x^2 - 3x + 9$ Standard $(0,9)$ $\uparrow\uparrow$

2. $3(x - 7)^2 + 1$ Vertex $(7,1)$ \uparrow

3. $1/2(x - 3)(x + 4)$ x-intercept $(3,0)$ $(-4,0)$ \curvearrowright

4. How many cheeseballs fit on the plate?



Polynomial Vocabulary

$$3\text{☺} + 2 = 7$$

A **monomial** is an expression that is a **number**, **variable**, or a **product** of a number and variables.)

$$3x \quad 27y^2 \quad -2xy$$

$$x, y, a, \text{☺}$$

A **polynomial** is an expression that includes **multiple terms** (number, variable, or a product of a number and variables).

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

The **degree** of a monomial is the **sum of the degrees** on each variable.

The **degree of a polynomial** is the degree of the monomial with the **greatest exponent**.

Standard Form of a polynomial means that the degrees of all its terms (monomials) are in order from **greatest degree to least degree**.

exponents

Classifying Polynomials



First Name: Degree of the Polynomial

Second Name: Number of Terms in the Polynomial

Degree	# of Terms	Name	Example
0	1	Constant Monomial	4
1	2	Linear Binomial	$3x + 2$
2	3	Quadratic Trinomial	$4x^2 + 3x + 2$
3	4	Cubic Polynomial	$3x^3 - 2x^2 + 4x - 6$

4 + Polynomial

More Examples:

6 is a constant monomial

$2x - 9$ is a linear binomial

$3x$ is a linear monomial

$-4x^2 + 6x - 4$ is a quadratic trinomial

$-7x^2$ is a quadratic monomial

$9x^3 + 5x - 1$ is a cubic trinomial

$10x^2 - 3x$ is a quadratic binomial

$8x^3 + 7x^2 + 4x - 9$ is a cubic polynomial

Classifying Polynomials

First Name: Degree of the Polynomial

Second Name: Number of Terms in the Polynomial

Degree	# of Terms	Name	Example
3	2	Cubic Binomial	$-7 + 3n^3$
0	1	Constant Monomial	5
4	4	Quartic Polynomial	$-x^4 + 3x^2 - 2x + 11$
2	3	Quadratic Trinomial	$2x^2 - 4x - 1$

Can you write an example of a **linear** ²monomial? $2x + 3$

Can you write an example of a **linear** trinomial? $2x + |x + 3$
 NO $3x + 3 - 2$
 $3x + 1$

Classifying Polynomials

First Name: Degree of the Polynomial

Second Name: Number of Terms in the Polynomial

Polynomial	Degree	Name using degree	Number of terms	Name Using Number of Terms
$5x - 3$	1	linear	2	binomial
$2x^2 - 5x - 9$	2	quadratic	3	trinomial
$7x^3$	3	cubic	1	monomial
$8x^4 + 12x$	4	quartic	2	binomial
$-10x^0$	0	constant	1	monomial

Classifying Polynomials

First Name: Degree of the Polynomial

Second Name: Number of Terms in the Polynomial

Find the degree of each monomial.

1. $\frac{5}{6}x$ Degree 1 Explain multiply x once

2. $9v^3w^8$ Degree 11 Explain Sum of exponents for the term

3. $19x^0$ Degree 0 Explain Anything to zero power = 1

Classifying Polynomials

First Name: Degree of the Polynomial

Second Name: Number of Terms in the Polynomial

Name each polynomial based on its **degree** and the **number of terms**.

4. $-4x + 7$ linear Binomial

5. $4x^6 + 7x^4 + 9x$ 6th degree trinomial

6. Write your own cubic monomial $4x^3$ $9xyz$ ✓

7. Write your own quadratic binomial $8x^2 + 2x$

5⁺
5th deg.
6th deg.
⋮
⋮

Classifying Polynomials

Standard Form of a polynomial means that the degrees of all its terms (monomials) are in order from **greatest degree to least degree**.

Write each polynomial in standard form.

8. $6x^2 + 7 - 9x^4$ _____

9. $14 - 7x + 19x^3$ _____

10. $7x^2 + 5x + 9 + x^2$ _____

When a polynomial is in standard form, the number in front is called the **leading coefficient**.

Identify the leading coefficient for:

#8 _____, for #9 _____, for #10 _____

Homework



Classifying Polynomials (9.1)

WKS

DUE: _____