

# Introduction to Polynomials



## Overview of problems



Example Set: A

Determine if the following expressions are polynomials explain your answer

$$-\frac{1}{3}x^2$$

$$8x^2 - y^2$$

$$4x^5 + x^2 - x^{\sqrt{7}}$$

$$\frac{2x^4 + x^3}{4}$$

$$x + y + z$$

$$-.00728xy^2 - \frac{1}{7}z$$

$$\sqrt{x} + 2x$$

$$\sqrt{3}x - \sqrt{7}$$



## Example Set: B

Identify each polynomial as a **monomial**, **binomial**, **trinomial** or **polynomial**. Then state the degree.

$$k^5$$

$$3x^2 - x + 1$$

$$ab^2 - 2a + b$$

$$\sqrt{6}x + 1$$

$$4r^2 - 6y^3$$

$$14t^3 - 8t^2 + t - 9$$



## Example Set: C

Write each polynomial in **standard form**. Then identify its **leading term** and **leading coefficient**

$$x + 3x^2$$

$$11 - 9y^2 + 2y$$

$$z^2 + 4 - 13z^5 + z$$

$$10x - 9x^4 + 20x^3 - x^5$$

$$-7y^2 + 8x^2$$

$$3t - t^2 + 5t^3$$

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## Overview of problems- KEY



Example Set: A

Determine if the following expressions are polynomials explain your answer

$$-\frac{1}{3}x^2 \quad \text{yes}$$

$$8x^2 - y^2 \quad \text{yes}$$

$$4x^5 + x^2 - x^{\sqrt{7}} \quad \text{NO}$$

$$\frac{2x^4 + x^3}{4} \quad \text{yes}$$

$$x + y + z \quad \text{yes}$$

$$-.00728xy^2 - \frac{1}{7}z \quad \text{yes}$$

$$\sqrt{x} + 2x \quad \text{NO}$$

$$\sqrt{3}x - \sqrt{7} \quad \text{yes}$$



## Example Set: B

Identify each polynomial as a **monomial**, **binomial**, **trinomial** or **polynomial**. Then state the degree.

$$k^5 \quad \text{monomial, 5}^{\text{th}} \text{ deg.}$$

$$3x^2 - x + 1 \quad \text{trinomial, 2}^{\text{nd}} \text{ deg.}$$

$$ab^2 - 2a + b \quad \text{trinomial, 2}^{\text{nd}} \text{ deg.}$$

$$\sqrt{6}x + 1 \quad \text{binomial, 1 deg.}$$

$$4r^2 - 6y^3 \quad \text{binomial, 3}^{\text{rd}} \text{ deg.}$$

$$14t^3 - 8t^2 + t - 9 \quad \text{polynomial, 3}^{\text{rd}} \text{ deg.}$$



## Example Set: C

Write each polynomial in **standard form**. Then identify it's **leading term** and **leading coefficient**

$$x + 3x^2$$

$$3x^2 + x$$

$$\text{LT: } 3x^2$$

$$\text{LC: } 3$$

$$11 - 9y^2 + 2y$$

$$-9y^2 + 2y + 11$$

$$\text{LT: } -9y^2$$

$$\text{LC: } -9$$

$$z^2 + 4 - 13z^5 + z$$

$$-13z^5 + z^2 + z + 4$$

$$\text{LT: } -13z^5$$

$$\text{LC: } -13$$

$$10x - 9x^4 + 20x^3 - x^5$$

$$-x^5 - 9x^4 + 20x^3 + 10x$$

$$\text{LT: } -x^5$$

$$\text{LC: } -1$$

$$-7y^2 + 8x^2$$

can't order  
by degree

$$-7y^2 + 8x^2$$

or

$$8x^2 - 7y^2$$

$$\text{LT: } -7y^2$$

$$\text{LC: } -7$$

$$\text{LT: } 8x^2$$

$$\text{LC: } 8$$

$$3t - t^2 + 5t^3$$

$$5t^3 - t^2 + 3t$$

$$\text{LT: } 5t^3$$

$$\text{LC: } 5$$