

Home: 31

p429-430 #11-49

Date: _____

<http://www.mathvizza.com>Bell WorkDirections: Please simplify the following.

1. $\left(\frac{2xy^2}{x^5y}\right)^{-4}$

2. $(3xy^2)^2(2x^4y^{-7})$

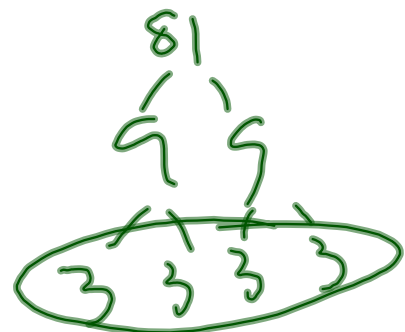


3. $81^{1/4}$

$4\sqrt[4]{81}$

3

$\sqrt[4]{81}$
 $\sqrt{9}$
3



Objectives

1. The students will write **polynomials** in standard form.
2. The students will determine if a given expression is a **polynomial** expression or not.
3. The students will evaluate **polynomials** for given values of x .
4. The students will simplify **polynomial** expressions involving parentheses.

HW #35 p429 #11-28
31

Vocabulary

Monomial- a one term expression of the form ax^n where $a \in \mathbb{R}$ $n \in \mathbb{N}$

Constant- a term that doesn't vary

$$3x^0$$

Polynomial Expressions - a sum of one or more monomial expressions

Ex.

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

$$4x^5 - 10$$

Standard Form -

$$ax^n + bx^{n-1} + cx^{n-2} \dots \dots \dots z$$

Descending Order

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

$$2x + 4y = 12$$

$$(3x + 4)(2x + 8)$$

Example



Examples | Non-Examples

$$2x^4$$

$$\pi x$$

$$\frac{1}{3}x$$

$$7x^0$$

$$4x^{-4}$$

$$x^{1/2}$$

$$\frac{1}{x^7}$$

$$\sqrt[3]{x} = 3x^{1/3}$$

$$3^x$$

Degree of Polynomials - the largest exponent in the polynomial

$$4x^3 + 7$$

Classification of Polynomials

$$2x^3 - 9$$

by degree		by number of terms	
0	constant	1 →	monomial
1	linear	2 →	binomial
2	quadratic	3 →	trinomial
3	cubic	4 or more →	polynomial
4	quartic		
5	quintic		
6 or more	higher degree		

Examples from the Homework

Directions: Write each polynomial in standard form.

12. $4x^4 + x^2 + x^3 + x + 1$

$$4x^4 + x^3 + x^2 + x + 1$$

14. $\underline{9.1x^2} + 5.4x^5 + \underline{3.3x^2} + 2.1$

$$5.4x^5 + 12.4x^2 + 2.1$$

Classifying Polynomials

Determine whether each expression is a polynomial. If so, classify the polynomial by degree and by the number of terms.

18. $-4x^3 + 3x^3 - 5x^6 + 4$

$$\underline{-5x^6} - \underline{x^3} + \underline{4}$$

higher deg. trinomial

20. $4^{2x} + 5^x - x + 1$

not

24. $\frac{8}{x^2} - \frac{7}{x^3} + x$ not

$$8x^{-2}$$

28. $7\sqrt{x} + 4$ not

$$7x^{1/2} + 4$$

Evaluating Polynomial Expressions/Functions

Evaluate each polynomial for the indicated value of x

30. $x^4 + 2x^3 + 2$ for $x = -2$

$$\begin{aligned} & (-2)^4 + 2(-2)^3 + 2 \\ & 16 + 2(-8) + 2 \\ & 16 - 16 + 2 = \boxed{2} \end{aligned}$$

36. $\frac{3}{10}x^3 + \frac{7}{10}x^2 + \frac{1}{10}x + \frac{9}{10}$ for $x = 10$

Simplifying Polynomials Expressions with Parentheses

40. $(x^5 + x^3 + x) + (x^4 + x^2 + 1)$

$$x^5 + x^3 + x + x^4 + x^2 + 1$$

$$x^5 + x^4 + x^3 + x^2 + 1$$

quintic
poly.

42. $(5x^3 + 3x^2 + 8x + 2) - (2x^2 + 4x + 7)$

$$5x^3 + 3x^2 + 8x + 2 - 2x^2 - 4x - 7$$

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

cubic
poly.

Discovery Exercise

Function	Degree	Number of U-turns in the graph
$y=x^2+x-2$		
$y=3x^3-12x^2+4$		
$y=-2x^3+4x^2+x-2$		
$y=x^4+2x^3-5x^2-6x$		