

Notes for Section R.3: Polynomials (pp. 24 – 32)

Name _____

Date _____

Instructor _____

Topics: Rules for exponents, polynomials, and operations with polynomials

Definitions to use:

Exponent

Base

Degree

Term

Coefficient

Leading Coefficient

Trinomial

Binomial

Monomial

Distributive Property

FOIL

I. Rules for exponents (pp. 24 – 26)

1. Product Rule: $a^m \cdot a^n = a^{m+n}$

When multiplying with like bases, keep _____ and _____.

2. Power Rule #1: $(a^m)^n = a^{mn}$

To raise a power to a power, _____.

3. Power Rule #2: $(ab)^m = a^m b^m$

To raise a product to a power, _____.

4. Power Rule #3: $\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$

To raise a quotient to a power, _____.

5. For any nonzero real number a , then $a^0 = 1$.

Ex. Use the properties of exponents to simplify each expression.

a. $(4m^3n^0)^2 =$

b. $\left(\frac{r^8}{s^2}\right)^3 =$

II. Polynomials (pp. 26 – 27)

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

The polynomial has _____ terms that are separated by _____ or _____.

The degree of the polynomial = the degree of _____ power.

The _____ is the leading term and the _____ is the leading coefficient.

For a polynomial in x , the degree of the term is _____.

For a polynomial with more than one term, the degree of the term is _____.

For a polynomial in x , the degree of the polynomial is _____.

A _____ is a polynomial with one term.

A _____ is a polynomial with two terms.

A _____ is a polynomial with three terms.

Ex.

| Polynomial | Degree | Type |
|--------------------------------------|--------|---------------|
| $9p^7 - 4p^3 + 8p^2$ | | Trinomial |
| $29x^{11} + 8x^{15}$ | 15 | |
| $-10r^5s^8$ | 14 | |
| $5a^3b^7 - 3a^5b^5 + 4a^2b - a^{10}$ | 11 | None of these |

III. Operations with polynomials

Like or similar terms are terms that have _____.

To add or subtract polynomials, you _____

Ex. $2(12y^2 - 8y + 6) - 4(3y^2 - 4y + 2)$

=

(Distributive Property)

=

(Combine like terms)

=

(Simplify)

To multiply polynomials, you can use the _____ property or you can mimic

Ex. $(3p^2 - 4p + 1)(p^3 + 2p - 8)$

$$\text{Ex. } (2z-1)(-z^2+3z-4)$$

Multiplying Binomials:

F.O.I.L. is an acronym for F _____, O _____, I _____, L _____.

$$\text{Ex. } (6m+1)(4m-3) =$$

$$\text{Ex. } (5m^3-3)(5m^3+3) =$$

$$\text{Ex. } (3x-7y^4)^2 =$$

The pattern $(a-b)(a+b) = a^2 - b^2$ is the product of a _____ and _____ of two terms.

The pattern $(a+b)^2 =$ _____ and _____ $= a^2 - 2ab + b^2$ are special patterns of FOIL. You **cannot** distribute the square through a parentheses, but you must FOIL the problem.

Omit division of polynomials (pp. 31 – 32). Stop the tape at 17:33.

Assignment:

Text: pp. 32 – 34 # 19 – 51 odd, 63 – 71 odd

“Review of Algebra”: p. 85 #9, 11, 13, 33 – 41 odd

p. 91 #1 – 4, 17 – 27 odd, 37 – 41 odd, 49 – 53 odd