1A-BE Monday 4-4-11

① Define "monomial"

② List the six exponent rules and give an example of each.

Monomial (one) — Number, variable, or product (multiply) of a number and variable(s).

(Ex) $5, x, x^2, xy, 4x^3y^2$

Polynomial (many) — A monomial or a sum (add or subtract) of monomials.

(Ex) $5, x, 5-x, 6x+3y-2$

Combine all *like* terms! Like terms have the same variable(s) and each variable has the same exponent.

(Ex) $5x^2 + 2y + 3x + 4x^2$

$\Rightarrow 9x^2 + 2y + 3x$

Polynomials of 1, 2, and 3 terms have special names:

x	$x+y$	$x+y+z$
monomial or 1-term polynomial	binomial or 2-term polynomial	trinomial or 3-term polynomial

After 3, they are just "N-term" polynomials

(Ex) 8-term polynomial

IDENTIFY POLYNOMIALS (WHY or WHY NOT, SPECIAL NAME?)

Ⓐ $2x - 3yz$ — Yes, sum of two MONOMIALS — BINOMIAL

Ⓑ $8N^3 + 5N^{-2}$ — No, because $N^{-2} = \frac{1}{N^2}$ so you are dividing 2 variables. — ———

Ⓒ -8 — Yes, A 1-term POLYNOMIAL — MONOMIAL

Ⓓ $4a^2 + 5a + a + 9$ — Yes, A sum of MONOMIALS but, simplifies to $4a^2 + 6a + 9$ — TRINOMIAL

THIS WAS EX 1 Pg 432
Ch. 8-4 POLYNOMIALS

Polynomials have an important property called the degree of the polynomial.

It is not its temperature!

But it does indicate how complicated the polynomial is.

Degree of a monomial — the sum (add) of the exponents of all the variables, and only the variables, of the monomial.

(Ex) $2x^2 \Rightarrow$ degree is 2.

$5x \Rightarrow$ degree is 1

$4xyz^5 \Rightarrow$ degree is 7

$3 \Rightarrow$ degree is 0 Why? $3x^0 = 3$

Degree of a polynomial — Look at each monomial in the polynomial and find its degree. Identify the biggest — that is the degree of the whole polynomial.

DO NOT ADD THE MONOMIALS!

(Ex) $5x + 2y^3 + 6xy + 4$ Degree?

degree 1 degree 3 degree 2 degree 0

THIS IS A 4-term POLYNOMIAL of degree 3

ASCEND ⇒ go up ↗

descend ⇒ go down ↘

(M*) d = decrease

You NORMALLY ARRANGE POLYNOMIALS IN descending order by degree ⇒ highest degree MONOMIAL first

⇒ $2y^3 + 6xy + 5x + 4$

Numbers ALWAYS LAST

If you are asked to put THEM in ASCENDING order, START WITH THE SMALLEST degree

(This is NOT NORMAL!!)

FIND THE degree of EACH POLYNOMIAL AND list them IN CONVENTIONAL order by degree. (descending ⇒ highest first)

(EX) $5mn^2$ degree 3 MONOMIAL

(EX) $-4x^2y^2+3x^2+5$ degree 4 TRINOMIAL ALREADY IN ORDER

(EX) $3a+7ab-2a^2b+16$ degree 3 4-term poly $-2a^2b+7ab+3a+16$

(EX) $7x^2+2x^4-11$ degree 4 TRINOMIAL $2x^4+7x^2-11$

(EX) $2xy^3+y^2+5x^3-3x^2y$ degree 4 4-term poly $2xy^3+5x^3-3x^2y+y^2$

WHAT IF you were asked TO PUT THESE IN ORDER by degree of x?

$$5x^3 - 3x^2y + 2xy^3 + y^2$$

$$\uparrow \quad \uparrow \quad \uparrow \quad \uparrow$$

$$3 \quad 2 \quad 1 \quad 0$$

8x3:4 Pg 433

Homework

- Read Ch 8-4
- Pg. 434 #1-10