MATH 0270/1314 COLLEGE ALGEBRA Week 4 2/12/19 Tue.

(1) First Test on P2 & P3, middle of next week

(2) No Class this Thursday (2/14)

(3) EXTRA CREDIT: Dishman Art Museum. Art Show PG-13.

• WebAssign Examples.

(12). $\frac{6}{\sqrt{5}+\sqrt{6}}$.

$= \frac{6}{\sqrt{5}+\sqrt{6}} \cdot \frac{\sqrt{5}-\sqrt{6}}{\sqrt{5}-\sqrt{6}}$ ← $\boxed{(a+b)\cdot(a-b) = a^2 - b^2}$

$= \frac{6\cdot(\sqrt{5}-\sqrt{6})}{5-6}$

$= \frac{6\sqrt{5}-6\sqrt{6}}{-1} = \boxed{-6\sqrt{5}+6\sqrt{6}}$

P.3. POLYNOMIAL

e.g. a Polynomial in x may look like $2x^2+3x-7$.

each "part" is separated by a "+" or "−" sign, the "parts" are called TERMS.

I. DISTINGUISHED BY THE NUMBER OF TERMS.

A. one term (e.g. $3x$) polynomial is called MONOMIAL

B. two terms (e.g $5x+7$) polynomial is called BINOMIAL

C. three terms (eg. $x^2+3x-14$) polynomial is called TRINOMIAL

II. DISTINGUISHED BY THE DEGREE

- Definition of **DEGREE**
  the largest exponent in any term

  e.g. $7x^5 - 5x^3 + 2x - 9$

  Degree is 5 (aka. 5th degree polynomial)

  This polynomial is in **STANDARD FORM**

  ↓

  arrange the polynomial in descending order of exponent (largest to smallest).

- Definition of **LEADING TERM**.
  first term in standard form. ($7x^5$)

- Definition of **LEADING COEFFICIENT**
  coefficient of the leading term (7).

- ✗ Exponents in a polynomial are positive integers.

  ↓

  the set of Natural Numbers $\{1, 2, 3, \ldots\}$

WEBASSIGN P. 3.

(1). Consider $2x^2 - x + 3$.

(a) standard form.

$\boxed{2x^2} + \boxed{-x} + \boxed{3}$

(b) degree : 2

leading coefficient : 2.

(c) it's a **trinomial**

(4). Determine if the expression is a polynomial. If Yes, put it in standard form, if not, enter NP.

$y^2 - \sqrt{y}$ NP

$\sqrt[2]{y} = y^{\frac{1}{2}}$ ← NOT AN INTEGER.

ADDING POLYNOMIALS.

- Add the "Like Terms"
  - (1) Same variable
  - (2) same exponent.

$2x+3y = 2x+3y$

CAN'T COMBINE THESE

$2x+3x^3 = 2x+3x^3$

- Demonstration

(1) $\underline{3}x + \underline{5}x = (3+5)x = \boxed{8x}$

☆ add the coefficients of the like terms

(2) $(\underline{3}x^2 - \underline{7}) + (\underline{2}x^2 + \underline{5}) = (3+2)x^2 + (-7+5) = \boxed{5x^2 - 2}$

SUBTRACTING POLYNOMIALS.

(1). $(3x^2 - 7) - (2x^2 + 5)$

$= 3x^2 - 7 - 2x^2 - 5$ [distribute the negative, aka: change the sign of everything inside the parenthesis after "-"]

$= \boxed{x^2 - 12}$