6.1 Modeling with Polynomials

Definitions:

- Term – has a coefficient and a variable multiplied together; or a constant. ex: $2x^2$; 10
- Constant – a # by itself (no variable) ex: 25, 6, 5/2, 0.25
- Coefficient – a # that is in front of (or being multiplied by) a variable ex: $6x^3$; $\frac{1}{2}a^2$, $0.75y^4$
- Polynomial – one or more terms that are added or subtracted. ex. $\underset{1}{x^2} + \underset{2}{2x} + \underset{3}{3}$
- <u>Monomial</u> – a polynomial with only one term!! ex: $2x^2$
  $\underset{\uparrow 1}{}$
- <u>Binomial</u> – a polynomial with 2 terms ex: $(x+3)$
  $\underset{2}{\uparrow}$ $2y^2 + 3y$
- <u>Trinomial</u> – a polynomial with 3 terms ex: $3a^2 + 2a + 1$
  $\underset{\uparrow 3}{}$
- Degree of a term – the highest power (or exponent) on a single term. ex: $3y^3 = $ degree $= 3$
- Degree of a polynomial – the highest power or exponent on the entire polynomial. ex: $4x^{③} + bx + 1$
  Degree $= 3$

Ex: 1) How many terms in each expression? Identify the type of polynomial.

a) $3x^5 - 2x^3$
$\underset{1}{} \quad \underset{1}{}$
– 2 terms
→ binomial

b) $2xyz$
– 1 term
→ monomial

c) $3x^2 - x + 7$
→ 3 terms
– trinomial

Ex: 2) State the degree of each:

a) $5x^3y^2z^5$
$= 3 + 2 + 5$
$= 10$

b) $3x^1 + 5$
$= 1$

c) $2x^3y^2 + 5xy^2 - 3xyz^2$
$\quad 5 \quad 3 \quad 4$
$= 5$ (highest degree)

✳ To find the degree of the polynomial or monomial with more than 1 variable in the same term, add the exponents from each variable.

ex: $4x^1y^2z^3$ $1 + 2 + 3 = \underline{6}$

✳ *Homework: pg. 281 #1, 4-7, 11, 14, 15*