5.2 In-class Practice Math 085

1. Identify the **terms**, the **degree** of each term, and the **degree of the polynomial**. Arrange the polynomial in decreasing powers of variables. Then identify the **leading term**, the **leading coefficient**, and the **constant term**.
   a) $t^3 - 4t^7 + s^2t^4 - 2$ b) $x^2y^2 + x^3y - xy^3 + 1$

2. Is it possible for a binomial to have degree 4? If so, give an example.

3. Give an example of a trinomial of 5th degree with the constant term of 2.

4. Find a polynomial function that gives the outside surface area of a box like this one, with dimensions as shown.

5. Perform the operations and simplify
   a) $(x^2 - 5y^2 - 9z^2) + (-6x^2 + 9y^2 - 2z^2)$
   b) $4x - 8 - (-1 + x) - (11x + 5)$
   c) $(9y^2 - 14yz - 8z^2) - (12y^2 - 8yz + 4z^2)$
   d) Subtract $(-4x + 2z^2 + 3m)$ from the sum of $(2z^2 - 3x + m)$ and $(z^2 - 2m)$.
   e) $(3x^{5a} - 5x^{4a} + 4x^{3a} + 8) - (2x^{5a} + 3x^{4a} + 4x^{3a} - x^a)$
   f) $3a - (5a - [a - (6a - 4a^2)]) + 7a - (3a^2 - 5a)$

6. Total profit $\boldsymbol{P}$ is defined as total revenue $\boldsymbol{R}$ minus total cost $\boldsymbol{C}$, and is given by the function $\boldsymbol{P}(\boldsymbol{x}) = \boldsymbol{R}(\boldsymbol{x}) - \boldsymbol{C}(\boldsymbol{x})$.
   Find the total profit $\boldsymbol{P}(\boldsymbol{x})$ if $\boldsymbol{R}(\boldsymbol{x}) = 280x - 0.4x^2$ and $\boldsymbol{C}(\boldsymbol{x}) = 7000 + 0.6x^2$.