Week 6 Wednesday

Make sure you know your neighbors' names. Then discuss:

How many monomials of $k[x, y]$ are *not* contained in the monomial ideal $\langle x^2y^4, y^4, x^2y^2, xy^2, x^2y \rangle$?

Gröbner Bases

1. Let $G = \{xy - z, x - yz\}$ and $I = \langle G \rangle \subseteq k[x, y, z]$. For which of the following monomial orders is G a Gröbner basis for I?

(A) Lexicographic order

(B) Graded lexicographic order

(C) Both (A) and (B)

(D) Neither (A) nor (B)

2. (A) True or (B) False? Any singleton set $G = \{g\}$ is a Gröbner basis for the ideal $I = \langle g \rangle \subseteq k[x_1, \ldots, x_n]$ it generates.

3. (A) True or (B) False?   The set $G = \{wy - x^2, wz - xy, xz - y^2\}$ is the reduced Gröbner basis for $I = \langle G \rangle \subseteq k[w, x, y, z]$ with respect to graded reverse lexicographic order.