Week 5 Wednesday

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

Suppose $>$ is a monomial order and $x^\alpha, x^\beta \in k[x_1, \ldots, x_n]$ are monomials. Is the following a true statement?

$$x^\alpha \text{ divides } x^\beta \text{ if and only if } x^\alpha \leqslant x^\beta$$

If not, is either implication true?

Multivariable Division

1. (A) True or (B) False? The remainder when $z^2 - x^4 y$ is divided by $(y - x^2, z - x^3)$ with respect to lex order with $z > y > x$ is zero.

2. (A) True or (B) False? The remainder when $x^2z - 6y^4 + 2xy^3z$ is divided by $(x + 3, y - 1, z - 2)$ with respect to lex order with $x > y > z$ is zero.