MATH 5399-001 HOMEWORK DUE 10 MAR

Before 5 pm on 10 March turn in your handwritten or (much preferred) TEX'ed solutions to the following problems.

(1) Exercise 4.1.10.
(2) A proof of Lemma 4.2.2 in your own words.
(3) Exercise 4.2.6.

Before Midnight on 10 March send me a Macaulay 2 file (extension m2) with the commands to solve the following problems. Please make `restart` the first command in your file.

(1) Write a function that takes as input two natural numbers (n, d), generates all monomials of degree d in the polynomial ring $k[x_1, \ldots, x_n]$, checks that their number agrees with the formula from Exerices 2.2.1, and outputs a list that contains all these monomials.