HW6 *(due June 10 Saturday)*

1- Define ***INTEGER PROGRAMMING (IP)*** problem as follows :
Given ***m*** equations :

$\sum_{j=1,n} a_{ij} x_j = b_i$, $i=1, ..., m$

in ***n*** variables x_j with integer coefficients a_{ij} and b_j , are there solutions with x_j equal to ***1*** or ***0*** for each ***j ?*** Prove that ***IP*** is an ***NP-complete*** problem.

2– Define ***3-COLORING (3C)*** problem as follows : Given an undirected graph can its vertices colored with three colors such that no two adjacent nodes have the same color. Prove that 3C is an ***NP-complete*** problem
*(Hint : Use a polynomial reduction from **3SAT**)*

3 - From the main text : 6.2.3, 6.2.4, 6.3.2