MATH 551 HOMEWORK 7

DUE WEDNESDAY, NOVEMBER 2

You are encouraged to work on the homework together, but your final write-up should be your own. Please write down on your homework the name of any collaborators. No late homework will be accepted. "Hungerford I.1.3" means Question 3 in the exercises at the end of Section 1 of Chapter 1.

(1) Hungerford III.1.1
(2) Hungerford III.1.16
(3) Hungerford III.2.2
(4) Hungerford III.2.9
(5) **Fall 2003**. Let r and n be positive integers, let G be a group generated by r elements, and let S be the set of subgroups of G with index at most n.
    (a) Show that S is finite.
    (b) Suppose that $r = 2$ and $n = 10$. Give an upper bound for the cardinality of S.
(6) **Spring 2005**. Suppose that the symmetric group S_4 acts transitively on a finite set X having 8 elements. How many different subgroups of S_4 can occur as stabilizers of points of X?