Homework 12 – due 04/23/08

Math 601

49. Dummit-Foote, 14.4, #1.

50. Dummit-Foote, 14.4, #2.

51. Dummit-Foote, 14.7, #3, 12.

52. Dummit-Foote, 14.8, #3.

53. Dummit-Foote, 14.8, #4.

Additional practice problems:

i) Dummit-Foote, 13.2, #4, 13, 16.

ii) Dummit-Foote, 13.6, #8.

iii) Dummit-Foote, 14.2, #13, 14.

iv) Let p be an odd prime number. Show that S_p is generated by any p-cycle together with any transposition. Use this to prove the following: If $f \in \mathbb{Q}[X]$ is irreducible of degree p and has exactly $p-2$ real roots, then $G(f)$ is isomorphic to S_p.