Mathematics 4530
Assignment 9, due November 5, 2013

Read Section 34, and glance at Section 35 (just for the statement of the Tietze extension theorem). Read Section 51. Then do:

- p. 218: 3
- p. 223: 3, 4, 5
- p. 330: 1, 2, 3

Additional problem (e.c.):

A path $\alpha\colon [a,b] \to \mathbb{R}^n$ is called *linear* if $\alpha(s) = sv + w$ for all s and some fixed $v, w \in \mathbb{R}^n$. The path is called *piecewise linear*, or *polygonal*, if there is a partition of $[a,b]$ such that α is linear on each subinterval. If U is an open subset of $\mathbb{R}^n$, prove that every path $\alpha\colon I \to U$ is path homotopic to a polygonal path $I \to U$.