Math 724: Problem Set 2

Due on 9.14.06

1. Show that $k[x_1, \ldots, x_n]$ is
   (a) a Noetherian ring,
   (b) not a Noetherian module (a Noetherian module is one in which all submodules are finitely generated), and
   (c) a finitely generated k-algebra.
2. Show that prime ideals are radical.
3. Exercise 1.6, p. 48
4. Exercise 1.9, p. 49