MATH 4140. HOMEWORK 3
Due Wednesday, February 10

Note: All numbered exercises are from Erdmann–Holm ([EH]).

(1) Read Sections 2.1–2.3 of [EH].

(2) Exercise 1.22. (In Part (b), assume that the algebra A is finite dimensional.)

(3) Exercise 2.1.

(4) Prove the statements in Example 2.13.(6).

(5) Exercise 2.10.

(6) Exercise 2.21.(a)–(b).

(7) Prove that the ideal generated by the elements x, y is not principal in the algebra $k[x, y]$ (so $k[x, y]$ is not a PID).

(8) Show that a left ideal of a k-algebra is automatically a k-vector space.