This weeks problem set provides some review questions in the lead up to the second midterm. A question marked with a † is difficult and probably too hard for an exam (though still illustrates a useful point). A question marked with a * is especially important.

Homework 4: due Friday 2 March: questions $22a$ and 23 from Section 5.1.

1. From section 2.2, problems 4, 9.
2. From section 2.3, problems 12.
3. From section 2.4, problems 7, 16.
4. From section 2.5, problems 4, 8.
5. From section 5.1, problems $2e$, $4b, f$, 8, 9, 16, $22a$, 23.
6. † Let V be a vector space and $E = \{ v_1, \ldots, v_n \}$ a collection of eigenvectors for a linear map $T : V \longrightarrow V$ such that the eigenvalues are all distinct. Prove that E is a linearly independent set. *Hint: use induction on n.*