HOMEWORK 9

• Section 9.2 in the book: Exercises 30, 34, 36, 40, 42, 46, 50, 54, 58.

Problem 1. (Cayley–Hamilton Theorem) Let

$$A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

be a matrix with constant real entries. By direct computation show that

$$A^2 - TA + DI = 0,$$

where $T = a + d$ denotes the trace of the matrix A, $D = \det(A) = ad - bc$ denotes the determinant of A, and I denotes the identity matrix.