Math 225 Linear Algebra and Matrix Theory
Spring 2015

Problem Set # 7 (due in class Thursday April 2nd)

Reading: FIS 4.1–4.4, 5.1

Problems:

1. FIS 4.2 Exercises 1 (If true, cite or prove it; if false, give a counterexample), 4, 14, 16, 20, 22, 23, 29.

Think about, but do not hand in: 2, 3, 25, 30.

2. FIS 4.3 Exercises 1 (If true, cite or prove it; if false, give a counterexample), 9, 12, 14, 21, 22 (For part c, try doing a little row reduction), 23.

Think about, but do not hand in: 10, 15, 16, 19, 24.

3. Let $A, B, C, D \in \mathsf{M}_{n \times n}(F)$. Suppose that A is invertible and that $AC = CA$. Prove that
$$\det \begin{pmatrix} A & B \\ C & D \end{pmatrix} = \det(AD - CB)$$