

YALE UNIVERSITY DEPARTMENT OF MATHEMATICS
Math 225 Linear Algebra and Matrix Theory
Spring 2018

Problem Set # 8 (due in class Thursday April 5)

Reading: FIS 4.1–4.4, 5.1

Problems:

1. FIS 4.1 Exercise 11

2. FIS 4.2 Exercises 1 (If true, cite or prove it; if false, give a counterexample), 4, 23, 25, 29.

Think about, but do not hand in: 2, 3, 14, 16, 20, 22, 30.

3. FIS 4.3 Exercises 1 (If true, cite or prove it; if false, give a counterexample), 9, 12, 14, 21 (Try to use exercise 20 to prove this), 22 (For part c, try doing a little column reduction), 23.

Think about, but do not hand in: 10, 15, 16, 19, 24, 26.

4. Let $A, B, C, D \in M_{n \times n}(F)$. Suppose that A is invertible and that $AC = CA$. Prove that

$$\det \begin{pmatrix} A & B \\ C & D \end{pmatrix} = \det(AD - CB)$$

Hint: Try to use FIS 4.3 exercise 21 to prove this.