

## 18.700. Problem Set 8

**Due date:** December 9 (Friday) in lecture or in my office before noon on due date. Late homeworks will be accepted only with a medical note or for some other MIT approved reason. You may work with others, but the final write-up should be entirely your own and based on your own understanding.

Each problem is worth 10 points (for the total homework score, there will be a normalization, so that all psets count equally).

**Problem 1:** Find the (upper-triangular) Jordan form  $J$  and a transition matrix  $P$  such that  $A = PJP^{-1}$ , where

$$A = \begin{pmatrix} 1 & 2 & 0 & 0 \\ 0 & 1 & 3 & 1 \\ 0 & 0 & 1 & 2 \\ 0 & 0 & 0 & 2 \end{pmatrix}.$$

**Problem 2:** 4.1.9.

**Problem 3:** 4.1.11.

**Problem 4:** 4.2.2.

**Problem 5:** 4.2.5.

**Problem 6:** 4.3.2.

**Problem 7:** 4.3.10.

The following problems are recommended for additional practice. They should *not* be turned in with the homework and they will not count towards the homework score. Section 4.1: 2, 4, 7, 13. Section 4.2: 3, 6, 8, 9, 10. Section 4.3: 5, 6, 7, 8, 11, 12, 13.