

# Linear Algebra (Math 220)

## Assignment due Thursday, March 6

### 1 Preparation

Expect a quiz.

**Suggested Reading:**

- Lay §§ 4.4 – 4.6
- Hefferon §§ 3.III – 3.IV

### 2 Exercises

1. Find the inverse, if it exists, of the  $4 \times 4$  matrix

$$\begin{pmatrix} 1 & 2 & 1 & 2 \\ -2 & -1 & 3 & 2 \\ -2 & 2 & 6 & -1 \\ 1 & 0 & -2 & 0 \end{pmatrix}$$

2. For each of the following  $4 \times 4$  matrices find (a) the rank of the matrix and (b) non-redundant sets of linear equations in 4 variables that characterize the linear relations among the rows of the matrix.

(a)

$$\begin{pmatrix} 1 & 2 & -4 & 7 \\ -2 & -1 & -1 & -8 \\ 5 & 7 & -11 & 29 \\ -1 & -4 & -14 & 5 \end{pmatrix}$$

(b)

$$\begin{pmatrix} 1 & 2 & -4 & 7 \\ -2 & -1 & -1 & -8 \\ 5 & 7 & -11 & 29 \\ -3 & -6 & 12 & -21 \end{pmatrix}$$

(c)

$$\begin{pmatrix} 1 & 2 & -4 & 7 \\ -2 & -1 & -1 & -8 \\ 5 & 7 & -11 & 29 \\ -1 & -4 & -14 & 0 \end{pmatrix}$$