

Homework 1

due on 9/7/11

Section Exercises

1.1 2, 5a, 7, 8abcd

2.1 1, 2, 3

Remark: For exercises 2.1 # 2: A line in \mathbb{R}^n is a set of the form

$$\{ra + b | r \in \mathbb{R}\}$$

where $a, b \in \mathbb{R}^n$. For example

$$\left\{ r \begin{pmatrix} 2 \\ 3 \\ 5 \end{pmatrix} + \begin{pmatrix} 0 \\ 2 \\ 1 \end{pmatrix} \mid r \in \mathbb{R} \right\}$$

is a line in \mathbb{R}^3 .For exercises 2.1 # 3: A plane in \mathbb{R}^n is a set of the form

$$\{ra + sb + c | r, s \in \mathbb{R}\}$$

where $a, b, c \in \mathbb{R}^n$. For example

$$\left\{ r \begin{pmatrix} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{pmatrix} + s \begin{pmatrix} 0 \\ 1 \\ 2 \\ 3 \\ 4 \end{pmatrix} + \begin{pmatrix} 0 \\ 0 \\ 1 \\ 2 \\ 3 \end{pmatrix} \mid r, s \in \mathbb{R} \right\}$$

is a plane in \mathbb{R}^5 .