Course 2E1 2005-06 (SF Engineers & MSISS & MEMS)

Sheet 16

Due: in the tutorial sessions next Wednesday/Thursday

Exercise 1

Which of the following sets of vectors are linearly dependent?

- (i) (1,0), (-3,0);
- (ii) (0, -1), (0, -2), (1, 2);
- (iii) (0, -1, 0), (0, 2, 0), (1, 2, 0);
- (iv) (0, -1, 1), (1, 2, 0), (1, 1, 1);
- (v) (0, 0, 0, 0, 0), (1, 2, 1, 1, 1).

Exercise 2

Which of the following sets of vectors are bases for the corresponding space \mathbb{R}^n ? (The dimension *n* should be clear from the length of vectors.)

- (i) (1,1);
- (ii) (1,0), (1,-1);
- (iii) (2, -2), (-1, 1);
- (iv) (-1, 1), (2, -2), (-1, -1);
- (v) (1, 1, 0, 0), (0, 1, 2, 3), (4, 3, 2, 1);
- (vi) (1, 0, -1), (0, -1, 0), (1, -2, -1).