

Course 2E2 2007-08 (SF Engineers & MSISS & MEMS)**S h e e t 5**

Due: at the end of the tutorial

Exercise 1

Which of the following sets of vectors are linearly dependent?

- (i) $(-1, 0), (5, 0)$;
- (ii) $(1, -1), (0, -2), (2, 2)$;
- (iii) $(0, -1, 0), (1, 2, 0), (0, 2, 0)$;
- (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) $(1, 0, -1), (0, -1, 0), (1, -2, -1)$.