

**Course 2E1 2006-07 (SF Engineers & MSISS & MEMS)**

## S h e e t 17

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Due: at the end of the tutorial

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**Exercise 1**

Which of the following sets of vectors are linearly dependent?

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

**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)  $(3, -3), (-1, 1)$ ;
- (iv)  $(-1, 1), (2, -2), (1, 1)$ ;
- (v)  $(1, 1, 0, 1), (0, 1, 2, 5), (5, 3, 2, 1)$ ;
- (vi)  $(1, 1, -1), (0, -1, 0), (1, -2, -1)$ .