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

Sheet 15

Due: at the end of the tutorial

Exercise 1

Use matrix multiplication to find:

- (i) the reflection of the vector (1, 6) about the *y*-axis;
- (ii) the orthogonal projection of the vector (-1, 4) to the x-axis;
- (iii) the image of the vector (-3, -1) under rotation through the angle $\frac{\pi}{3}$ about the origin.
- (iv) the image of the vector (2, 1) under rotation through the angle $\frac{-\pi}{4}$ about the origin.

Exercise 2

Determine which of the following are subspaces of \mathbb{R}^3 :

- (i) the set of all vectors of the form (a, 0, a);
- (ii) the set of all vectors of the form (a, 5, a);
- (iii) the set of all vectors of the form (a, b, 2a b);