Course 2E01 2017 (SF Engineers & MSISS & MEMS)

S h e e t 3

Due: at the end of the tutorial

Exercise 1

(i) Find parametric equations for the line spanned by the vector:

$$\mathbf{u} = (1, -4, 2);$$

(ii) Give a system of linear equations that determines the line in (i).

(iii) Find an equation for the plane generated (spanned) by the vectors:

$$\mathbf{u} = (-1, 0, -2), \quad \mathbf{v} = (-1, -3, 0).$$

Exercise 2

Determine whether the vectors span $\mathbb{R}^3$:

(i) $\mathbf{v}_1 = (3, 1, 2)$, $\mathbf{v}_2 = (-2, 2, 4)$, $\mathbf{v}_3 = (1, 0, 0)$;

Determine whether the vectors span $\mathbb{R}^2$:

(ii) $\mathbf{v}_1 = (1, 2)$, $\mathbf{v}_2 = (1, -1)$, $\mathbf{v}_3 = (-1, 1)$.