

Course 2E2 2007-08 (SF Engineers & MSISS & MEMS)

S h e e t 13

Due: at the end of the tutorial

Exercise 1

Find $\mathbf{v} + \mathbf{u}$, $-5\mathbf{v}$, $\|\mathbf{u}\|$, $\|\mathbf{v}\|$, the dot product $\mathbf{u} \cdot \mathbf{v}$, the angle between $\|\mathbf{u}\|$ and $\|\mathbf{v}\|$ and determine whether \mathbf{u} and \mathbf{v} are orthogonal (or for which values of parameters \mathbf{u} and \mathbf{v} are orthogonal, if any are present):

- (i) $\mathbf{u} = (1, 3, 0)$, $\mathbf{v} = (-3, 1, 0)$;
- (ii) $\mathbf{u} = (1, 0, 0, 1, 0)$, $\mathbf{v} = (1, 2, -1, 1, 0)$;
- (iii) $\mathbf{u} = (-1, k, 2, -k)$, $\mathbf{v} = (0, k, 1, 5)$;
- (iv) $\mathbf{u} = (a, -c, 0, b, 0)$, $\mathbf{v} = (3c, a, -c, 0, d)$.