

Course 2E2 2007-08 (SF Engineers & MSISS & MEMS)**S h e e t 11**

Due: at the end of the tutorial

Exercise 1

Find eigenvalues and corresponding eigenvectors of the following matrices:

(i) $\begin{pmatrix} -1 & 0 \\ 1 & 5 \end{pmatrix};$

(ii) $\begin{pmatrix} 1 & -1 & 1 \\ 0 & 1 & 2 \\ 0 & 1 & 2 \end{pmatrix};$

(iii) $\begin{pmatrix} 1 & -1 & 1 & 0 \\ 0 & 1 & 2 & 0 \\ 0 & 1 & 2 & 0 \\ 0 & 1 & 2 & 0 \end{pmatrix};$

Exercise 2

Find a matrix P that diagonalizes each matrix A in Exercise 1 and determine the corresponding diagonal matrix $D = P^{-1}AP$.