Tutorial ...

Name:_____

ID:_____

Mathematics 1E2 2006–07

HW 12 Due 5/2/07

(1)(12 marks) The following matrix has eigenvalues $4, 2, -2$. Calculate corresponding eigenvectors.

$$\begin{bmatrix} 1 & 0 & 3 \\ 0 & 2 & 0 \\ 3 & 0 & 1 \end{bmatrix}.$$

(2)(12 marks) The following matrix has repeated eigenvalues. Calculate its eigenvalues.

$$\begin{bmatrix} -9 & 20 & 6 \\ -5 & 11 & 3 \\ 1 & -2 & 0 \end{bmatrix}$$

(3)(12 marks) Calculate a basis which brings the above matrix to upper triangular form.

(4)(14 marks) (i) What is the probability of a 'full house' (3 of one value and 2 of another) in poker?

(ii) What is the probability that all six of your lotto numbers, from 1 to 42, are wrong?