Tutorial ...

**Name:**_____

**ID:**_____

# Mathematics 1E2 2006–07

**HW 8 Due 05/12/06**

**Note: Section 2 is moved from Mus 17 to Drawing Office for 05/12/06 only. Christmas test 2–4pm Monday 11/12/06. See Web page for route map.**

(1) Invert the following matrix using (i) the Adjoint Matrix method and (ii) Gauss-Jordan elimination.

$$\begin{bmatrix} 1 & -3 & 1 \\ -1 & 5 & -3 \\ -3 & 12 & -5 \end{bmatrix}$$

(2) Test the following lists of points for linear independence.

(i) $(1, -2, 0), (3, -7, -1), (2, -7, -3)$

(ii) $(1, 3, 2), (-2, -7, -7), (0, -1, -3)$

(iii) $(-1, -3, 3), (2, 7, -8), (0, -2, 2)$.

(3) Test the columns of the following matrix for linear independence.

$$\begin{bmatrix} -1 & -2 & 3 & 4 \\ 3 & 8 & -9 & -18 \\ 1 & 0 & -3 & 3 \\ 1 & 1 & -4 & 0 \end{bmatrix}$$

(4) In the following matrix, the third column depends on the others. Use the RREF to express the third column as a linear combination of the others.

$$\begin{bmatrix} 0 & 1 & 3 & -2 \\ 0 & 0 & 0 & -2 \\ -2 & -6 & -20 & 14 \\ -3 & -7 & -24 & 14 \end{bmatrix}.$$