Sheet 8

Due 17.30 Tuesday 13th March

Hand in solutions to questions 1b, 1c, 2b.

Please write your student ID number on your work and staple it together.

1. For each of the following matrices, find the adjoint and the determinant. If the determinant is not 0, find the inverse.

   (a) $\begin{pmatrix} 1 & 2 & -1 \\ 0 & -3 & 1 \\ -3 & 0 & 8 \end{pmatrix}$

   **(b) $\begin{pmatrix} 0 & -1 & 0 \\ -4 & 2 & -3 \\ 1 & 3 & 0 \end{pmatrix}$ (4 marks)

   **(c) $\begin{pmatrix} 0 & -1 & -3 \\ -3 & 2 & -3 \\ 1 & -1 & 0 \end{pmatrix}$ (4 marks)

2. For each of the following matrices, reduce it to upper triangular form using elementary row operations. Using the upper triangular form, find the determinant.

   (a) $\begin{pmatrix} 4 & 0 & 6 \\ 2 & 1 & 3 \\ 2 & 3 & 1 \end{pmatrix}$

   **(b) $\begin{pmatrix} 1 & -1 & 0 \\ -4 & 0 & -3 \\ 2 & 3 & 1 \end{pmatrix}$ (2 marks)