MAU11S02 Group A1 Quiz 03 9am 13/2/19

Rules and procedures.
1. Answers must be handed up at the end of the tutorial, no other time. **2.** Attempt 3 questions. Only *your first three answers* will be marked. **3.** Each question carries 20 marks, so the maximum quiz mark is 60. **4.** Marked quizzes will be returned, and answers published, the following week. **5.** If a particular method of solution is stipulated, you get no marks if you don't use it. **6.** The (9) quizzes will contribute 20% to your overall mark. **7.** You are allowed to collaborate and compare answers during the tutorial.

Question 1. Compute the following determinant, by bringing to upper triangular form.

$$\begin{vmatrix} 3 & 1 & 4 \\ 1 & 5 & 9 \\ 2 & 6 & 5 \end{vmatrix}$$

Question 2. Calculate the (2,1) and (2,2) minors in the following determinant.

$$\begin{vmatrix} 1 & 0 & 1 & 3 \\ 3 & -1 & 4 & 9 \\ -2 & 0 & -4 & -12 \\ 0 & -1 & -4 & -14 \end{vmatrix}$$

Question 3. Calculate the (2,3) and (2,4) minors of the determinant in Question 2, and hence complete the calculation of the determinant, by cofactor expansion along the second row.

Question 4. Evaluate the same determinant by bringing to upper triangular form.

Question 5. (i) Determine whether the column vectors $[2, 6, 4]^T$, $[3, 4, 1]^T$, and $[4, 7, 8]^T$, are linearly independent. (ii) Determine if the column vector $[8, 1, 4]^T$ depends linearly on them.