MAU11S02 Group A1 Quiz 01 9am 29/1/20 ANSWERS

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. **8.** ***Show all work.*** No marks will be given for answers which do not show the calculations.

Answer 1. $\vec{PQ} = (-2,-3,9), \vec{PR} = (0,2,-5), \vec{PQ} \times \vec{PR} = \pm(3,10,4)$
$3x + 10y + 4z = 1$

Answer 2.

$$\left(\frac{1}{4}\right)\begin{bmatrix} 11 & 6 \\ 3 & 2 \end{bmatrix}$$

Answer 3. Take the cross product $\vec{PQ} \times \vec{PR}$. The plane through P, Q, R (after simplification) has the equation $3x + 10y + 4z = 1$ and R satisfies it; coplanar.

Answer 4. $(1,1,-3) \cdot (-2,-2,-1) = -1$

Answer 5.

$$\begin{vmatrix} 1 & -1 & 1 \\ 1 & -2 & 3 \\ -3 & 6 & -8 \end{vmatrix} = -1 \quad \begin{vmatrix} 4 & -1 & 1 \\ 5 & -2 & 3 \\ 6 & 6 & -8 \end{vmatrix} = -24 \quad \begin{vmatrix} 1 & 4 & 1 \\ 1 & 5 & 3 \\ -3 & 6 & -8 \end{vmatrix} = -41 \quad \begin{vmatrix} 1 & -1 & 4 \\ 1 & -2 & 5 \\ -3 & 6 & 6 \end{vmatrix} = -21$$

$$x = \frac{-24}{-1} = 24 \quad y = \frac{-41}{-1} = 41 \quad z = \frac{-21}{-1} = 21$$