

MAU11S02 Group A1 Quiz 05 9am 27/2/19 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 10 marks, so the maximum quiz mark is 30. **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.

Answer 1.

$$\begin{array}{ccccccc} W_3 & 1 & -1 & 1 & & 1 & -1 & 1 \\ & 0 & 0 & 1 & & -1 & -1 & 0 \\ \text{cross product} & & & & & & & \\ W_1 & -1 & -1 & 0 & W_2 & 1 & -1 & -2 \end{array}$$

$$|W_1| = \sqrt{2} \quad |W_2| = \sqrt{6} \quad |W_3| = \sqrt{3}$$

$$S = \begin{bmatrix} -\frac{1}{\sqrt{2}} & \frac{1}{\sqrt{6}} & \frac{1}{\sqrt{3}} \\ -\frac{1}{\sqrt{2}} & -\frac{1}{\sqrt{6}} & -\frac{1}{\sqrt{3}} \\ 0 & -\frac{2}{\sqrt{6}} & \frac{1}{\sqrt{3}} \end{bmatrix}$$

Answer 2.

$$\begin{bmatrix} 1 \\ -1 - \sqrt{2} \\ 1 - \sqrt{2} \end{bmatrix}$$

Answer 3.

$$\begin{bmatrix} 0 \\ -\frac{2}{\sqrt{6}} \\ \frac{1}{\sqrt{3}} \end{bmatrix}$$

Answer 4.

$$(1, 3, 4) \cdot (1, -1, 1) / |(1, -1, 1)|^2 \quad (1, -1, 1)$$

$$\frac{2}{3}(1, -1, 1) = \left(\frac{2}{3}, -\frac{2}{3}, \frac{2}{3}\right)$$

Answer 5.

$$(1, 3, 4) - \left(\frac{2}{3}, -\frac{2}{3}, \frac{2}{3} \right) = \left(\frac{1}{3}, \frac{11}{3}, \frac{10}{3} \right)$$