

Name: _____
Student ID: _____

Quiz 5

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. §1.5 #7d. (2 marks)

$$A = \begin{bmatrix} 3 & 4 & 1 \\ 2 & -7 & -1 \\ 8 & 1 & 5 \end{bmatrix} \quad C = \begin{bmatrix} 3 & 4 & 1 \\ 2 & -7 & -1 \\ 2 & -7 & 3 \end{bmatrix}$$

Find an elementary matrix E that satisfies the equation.

$$EC = A$$

Question 2. §1.6 #2. (3 marks) Solve the system by inverting the coefficient matrix.

$$\begin{array}{rclcl} 4x_1 & - & 3x_2 & = & -3 \\ 2x_1 & - & 5x_2 & = & 9 \end{array}$$

Question 3. §1.7 #17 (2 marks) Find A^2, A^{-2} .

$$A = \begin{bmatrix} -2 & 0 & 0 & 0 \\ 0 & -4 & 0 & 0 \\ 0 & 0 & -3 & 0 \\ 0 & 0 & 0 & 2 \end{bmatrix}$$

Question 4. §1.7 #17 (3 marks) Prove: If $A^T A = A$, then A is symmetric and $A = A^2$.