

Quiz 6

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. (3 marks) §1.6 # T-F a) It is impossible for a system of linear equations to have exactly two solutions.

Question 2. (2 marks) §1.6 #13 Determine conditions on the b_i 's, if any, in order to guarantee that the linear system is consistent.

$$\begin{aligned} 6x_1 - 4x_2 &= b_1 \\ 3x_1 - 2x_2 &= b_2 \end{aligned}$$

Question 3. (3 marks) §1.7 #33 Prove: If $A^T A = A$, then A is symmetric and $A = A^2$.

Question 4. (2 marks) §1.7 #26 Find all values of x in order for A to be invertible

$$A = \begin{bmatrix} x - \frac{1}{2} & 0 & 0 \\ x & x - \frac{1}{3} & 0 \\ x^2 & x^3 & x + \frac{1}{4} \end{bmatrix}$$