Name: _____
Student ID: _____

Quiz 7

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. §2.2 #29 *(5 marks)* Use row reduction to show that

$$\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (b-a)(c-a)(c-b)$$

Question 2. §2.3 #18 *(5 marks)* Find the values of k for which A is invertible

$$A = \begin{bmatrix} 1 & 2 & 0 \\ k & 1 & k \\ 0 & 2 & 1 \end{bmatrix}$$

Bonus Question. [1] Let A and B be $n \times n$ invertible matrices, and AB is its own inverse (i.e. $(AB)^{-1} = AB$).

a. *(2 marks)* Prove that BA is invertible and is its own inverse.

b. *(2 marks)* Evaluate and simplify $(AB+I)^2$

c. *(1 mark)* Evaluate and simplify $(AB+I)^8$

[1] From a John Abbott Final Examination