Name: _____

Student ID: _____

Quiz 3

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. Consider the matrix:

$$A = \begin{bmatrix} 1 & 1 & 1 & 9 & 3 & 4 & 1 & 0 & 9 \\ 0 & 1 & 1 & 4 & 9 & 2 & 7 & 7 & 9 \\ 0 & 0 & 1 & 1 & 4 & 9 & 2 & 7 & 7 \\ 0 & 0 & 0 & 1 & 1 & 4 & 9 & 2 & 7 \\ 0 & 0 & 0 & 0 & 1 & 1 & 4 & 9 & 2 \\ 0 & 0 & 0 & 0 & 0 & 1 & 1 & 4 & 9 \\ 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 & 4 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 1 \end{bmatrix}, \; B = \begin{bmatrix} \frac{1}{2} & 0 & 0 \\ 0 & \frac{1}{3} & 0 \\ 0 & 0 & 1 \end{bmatrix}, \; C = \begin{bmatrix} 0 & 1 & 2 & 1 \\ 0 & 2 & 3 & 2 \\ -2 & 1 & 0 & -2 \\ 0 & 2 & 0 & 0 \end{bmatrix}$$

a. *(2 marks)* Compute $\det(A)$

b. *(3 marks)* Compute $\det(B^{-2})$

c. *(4 marks)* Compute $\det(C)$

d. *(1 mark)* Find all 3×3 diagonal matrices Y that satisfy $Y^2 - 4Y - 5I = 0$.