MATH 6701 - Exam 2b

Justify all your anwsers

Section:
Last Name:
First name:

Problem 1 (5 points): Find two matrices A and B such that $AB = 0$ but $A \neq 0$ and $B \neq 0$.

Problem 2 (5 points): Find the rank of

$$\begin{pmatrix} 1 & -2 & 3 & 4 \\ 1 & 4 & 6 & 8 \\ 0 & 1 & 0 & 0 \\ 2 & 5 & 6 & 8 \end{pmatrix}$$

Problem 3 (5 points): Consider the matrix

$$A = \begin{pmatrix} 1 & 1 & 1 \\ x & y & z \\ y+z & x+z & x+y \end{pmatrix}$$

Without expanding show that $\det A = 0$.

Problem 4 (5 points): (a) Find a diagonal matrix D and an invertible matrix P such that $A = P^{-1}DP$.

$$A = \begin{pmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 1 \end{pmatrix}$$

(b) Write the expression of P^{-1}.