

Name	ID	Grade/10

1. The augmented matrix for a system of 3 equations in 3 unknowns is given by

$$\begin{bmatrix} a & 0 & b & 2 \\ a & a & 4 & 4 \\ 0 & a & 2 & b \end{bmatrix}$$

Solve the system. (Use ERO's. There are four cases to be considered: unique solution, no solution, infinitely many solutions with 1 free variable, and infinitely many solutions with 2 free variables.)

2. [M*]

- (a) Evaluate the expression $A^5 - 3A^3 + 7A - 4I_3$ for the matrix

$$A = \begin{bmatrix} 1 & -2 & 3 \\ -4 & 5 & -6 \\ 7 & -8 & 10 \end{bmatrix}$$

- (b) Evaluate $p(A)$ where $p(x) = 3 - 12x - 16x^2 + x^3$

- (c) Compute the following expressions

$\det(A)$

$tr(A)$

$tr(A^{-1})$

$tr(AA^T)$

$tr(A^T A)$