

MATH 215
Practice -Exam 2

1. Find the inverse of the given matrices. Show **ALL** row operations that you used.

a) $A = \begin{bmatrix} 4 & -3 \\ 8 & -1 \end{bmatrix}$

b) $A = \begin{bmatrix} 1 & 2 & 1 \\ 3 & 1 & 4 \\ 2 & 2 & 4 \end{bmatrix}$

c) Using the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 1 \\ 3 & 1 & 4 \\ 2 & 2 & 4 \end{bmatrix}$ from part b) above solve $Ax = b$, where $b = \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}$

7. Let $T : R^3 \rightarrow R^2$ be the linear transformation such that $T \left(\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} \right) = \begin{bmatrix} 2 \\ -4 \end{bmatrix}$, $T \left(\begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix} \right) = \begin{bmatrix} -1 \\ 1 \end{bmatrix}$ and

$$T \left(\begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix} \right) = \begin{bmatrix} 3 \\ 9 \end{bmatrix}.$$

Find the standard matrix representation of T and $T \left(\begin{bmatrix} 3 \\ 4 \\ -2 \end{bmatrix} \right)$.