

Directions: This assessment has 2 questions, for a total of 20 points. You must show all of your work to receive full credit for an answer. Remember, you may not use a calculator or any other resources during this assessment. Good luck!!

First Name: _____ Last Name: _____ # _____

1. (10 points) Compute the product $A\vec{x}$ by using the rows of A .

$$A = \begin{bmatrix} 1 & 5 & 0 \\ 2 & 4 & 1 \\ 1 & 3 & 2 \end{bmatrix} \quad \vec{x} = \begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}$$

2. (10 points) Is the transformation $T\left(\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}\right) = \begin{bmatrix} (x_2 - 2)^2 - (x_2 + 2)^2 \\ (x_1 + 1)^2 - (x_1 - 1)^2 \end{bmatrix}$ a linear transformation? Find the matrix if the transformation is linear.