

Name: _____
Quiz 1; Friday, February 3
MATH 54 with Prof. Sethian
GSI: Alex Carney

You have 15 minutes to complete the quiz. Calculators are not permitted.

1. (2 points) Let $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ be the linear transform which rotates vectors 90 degrees counter-clockwise then reflects across the y -axis. Write down the matrix which represents the **inverse of T** .

2. (2 points) Suppose $T : \mathbb{R}^2 \rightarrow \mathbb{R}^2$ is a linear transform which maps

$$\begin{bmatrix} 3 \\ 1 \end{bmatrix} \mapsto \begin{bmatrix} 13 \\ 7 \end{bmatrix} \quad \text{and} \quad \begin{bmatrix} 2 \\ -1 \end{bmatrix} \mapsto \begin{bmatrix} 4 \\ 3 \end{bmatrix}.$$

Write down the matrix which represents T .

3. True or False:

- (a) For $n \times n$ matrices A and B , $(AB)^{-1} = A^{-1}B^{-1}$.
- (b) If A is invertible, then A represents a linear map which is one-to-one.
- (c) If A is invertible, then A represents a linear map which is onto.