Math 2210-006/011 Quiz 5 **Name: Due:** 10/7/19 This is a two-stage quiz. You will receive this back with each question graded pass/fail in our next class meeting. You have until the date specified above to submit corrections for partial credit.

1. (3 points) The figure below shows vectors \mathbf{u} , \mathbf{v} , and \mathbf{w} along with the images $T(\mathbf{u})$ and $T(\mathbf{v})$ under the linear transformation $T : \mathbb{R}^2 \to \mathbb{R}^2$. Carefully sketch and label the image $T(\mathbf{w})$ of \mathbf{w} under T.



2. (3 points) Consider a linear transformation $T: \mathbb{R}^4 \to \mathbb{R}^2$ such that

$$T\left(\begin{bmatrix}1\\-2\\-3\\4\end{bmatrix}\right) = \begin{bmatrix}1\\2\end{bmatrix} \text{ and } T\left(\begin{bmatrix}-2\\2\\3\\-5\end{bmatrix}\right) = \begin{bmatrix}-1\\5\end{bmatrix}.$$

Compute $T\left(\begin{bmatrix}-1\\0\\0\\-1\end{bmatrix}\right).$

3. (4 points) Let $T : \mathbb{R}^2 \to \mathbb{R}^2$ be the transformation which reflects a vector across the x_2 axis before rotating it counterclockwise by $\pi/2$ radians. Find the standard matrix of T.