Math 415 ADG **Name:**

Quiz # 6

March 14, 2014

No notes, electronic devices, or interpersonal communication allowed. Show work to get credit. Use the methods from this class.

Let $T : \mathbb{R}^3 \to \mathbb{R}^2$ be the linear transformation satisfying

$$T\left(\begin{bmatrix}2\\0\\0\end{bmatrix}\right) = \begin{bmatrix}8\\2\end{bmatrix}, \qquad T\left(\begin{bmatrix}0\\1\\0\end{bmatrix}\right) = \begin{bmatrix}9\\2\end{bmatrix}, \qquad T\left(\begin{bmatrix}0\\1\\1\end{bmatrix}\right) = \begin{bmatrix}4\\3\end{bmatrix}.$$

Consider the bases $\mathcal{B} = \left\{\begin{bmatrix}1\\0\\0\end{bmatrix}, \begin{bmatrix}-1\\1\\0\end{bmatrix}, \begin{bmatrix}0\\0\\1\end{bmatrix}\right\}$ of $\mathbb{R}^3$ and $\mathcal{C} = \left\{\begin{bmatrix}1\\0\end{bmatrix}, \begin{bmatrix}4\\1\end{bmatrix}\right\}$ of $\mathbb{R}^2$. Determine $[T]_{\mathcal{B},\mathcal{C}}$. Include your calculations! (You needn't show work in solving easy systems of linear equations.)