$$T = \begin{pmatrix} 2 & 0 \\ 1 & 2 \\ 1 & 1 \end{pmatrix}$$

Above we have $T : \mathbb{R}^2 \longrightarrow \mathbb{R}^3$ as a linear transformation sending the various colored vectors in $\mathbb{R}^2$ to the vectors in $\mathbb{R}^3$. The linear transformation itself is given above.