

Homework - June 15
Section 1.9

4. $T(\mathbf{e}_2) = (1/\sqrt{2}, 1/\sqrt{2})$ because it lies in the first quadrant. The standard matrix is $A = \begin{bmatrix} 1/\sqrt{2} & -1/\sqrt{2} \\ 1/\sqrt{2} & 1/\sqrt{2} \end{bmatrix}$.

8. Reflecting through the x_1 -axis and then over $x_2 = x_1$ sends \mathbf{e}_1 to $(1, 0)$ then to $(0, 1)$. This sends \mathbf{e}_2 to $(0, -1)$ then $(-1, 0)$. $A = \begin{bmatrix} 0 & -1 \\ 1 & 0 \end{bmatrix}$.

18. $A = \begin{bmatrix} -3 & 2 \\ 1 & -4 \\ 0 & 0 \\ 0 & 1 \end{bmatrix}$