Exercise 1 Let $\overrightarrow{\mathbf{v}} = \langle 1, -2, 2 \rangle$. Find the unit vector $\hat{\mathbf{u}}$ in the direction of $\overrightarrow{\mathbf{v}}$.

$$\hat{\mathbf{u}} = \left\langle \begin{bmatrix} \frac{1}{3} \end{bmatrix}, \begin{bmatrix} -\frac{2}{3} \end{bmatrix}, \begin{bmatrix} \frac{2}{3} \end{bmatrix} \right\rangle$$