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

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