Problem 1:

Plot $\mathbf{u}+\mathbf{v}$ and $\mathbf{u}-\mathbf{v}$ on an (x, y) coordinate plane given

$$\mathbf{u}=\begin{pmatrix}-1\\5\end{pmatrix} \quad \mathbf{v}=\begin{pmatrix}1\\0\end{pmatrix}$$

Worked Solution

First, we need to find $\mathbf{u}+\mathbf{v}$ and $\mathbf{u}-\mathbf{v}$.

$$\mathbf{u}+\mathbf{v}=\begin{pmatrix}-1\\5\end{pmatrix}+\begin{pmatrix}1\\0\end{pmatrix}=\begin{pmatrix}-1+1\\5+0\end{pmatrix}=\begin{pmatrix}0\\5\end{pmatrix}$$

$$\mathbf{u}-\mathbf{v}=\begin{pmatrix}-1\\5\end{pmatrix}-\begin{pmatrix}1\\0\end{pmatrix}=\begin{pmatrix}-1-1\\5-0\end{pmatrix}=\begin{pmatrix}-2\\5\end{pmatrix}$$

So the points we need to plot are $(0, 5)$ and $(-2, 5)$.