

$$\begin{array}{ccc}
 \mathbf{u}_1, \mathbf{u}_2 & \xrightarrow{T} & T(\mathbf{u}_1), T(\mathbf{u}_2) \\
 \downarrow + & & \downarrow + \\
 \mathbf{u}_1 + \mathbf{u}_2 & \xrightarrow{T} & T(\mathbf{u}_1 + \mathbf{u}_2) = T(\mathbf{u}_1) + T(\mathbf{u}_2)
 \end{array}$$