Let's define the space $\mathcal{V} = (\mathbb{R}^2)^2$

For notation lets say that if $\mathbf{A} \in \mathcal{V}$ then $\mathbf{A} = (\mathbf{0_A}, \mathbf{1_A}) = \big((x_{\mathbf{0_A}}, y_{\mathbf{0_A}}); (x_{\mathbf{1_A}}, y_{\mathbf{1_A}})\big)$

Let's define $\cong \subset \mathcal{V} \times \mathcal{V}$ a relationship, such as $\mathbf{A} \cong \mathbf{B}$) if and only if $\mathbf{0_A} + \mathbf{1_B} = \mathbf{1_A} + \mathbf{0_B}$. It should be clear that $\cong$ is an equivalence relationship.

Let's define $\sim \subset \mathcal{V} \times \mathcal{V}$ a relationship, such as $\mathbf{A} \cong \mathbf{B}$) if and only if $\|\mathbf{0_A} - \mathbf{1_A}\| = \|\mathbf{0_B} - \mathbf{1_B}\|$. It should be clear that $\sim$ is also an equivalence relationship. As well as $\cong \subset \sim$.