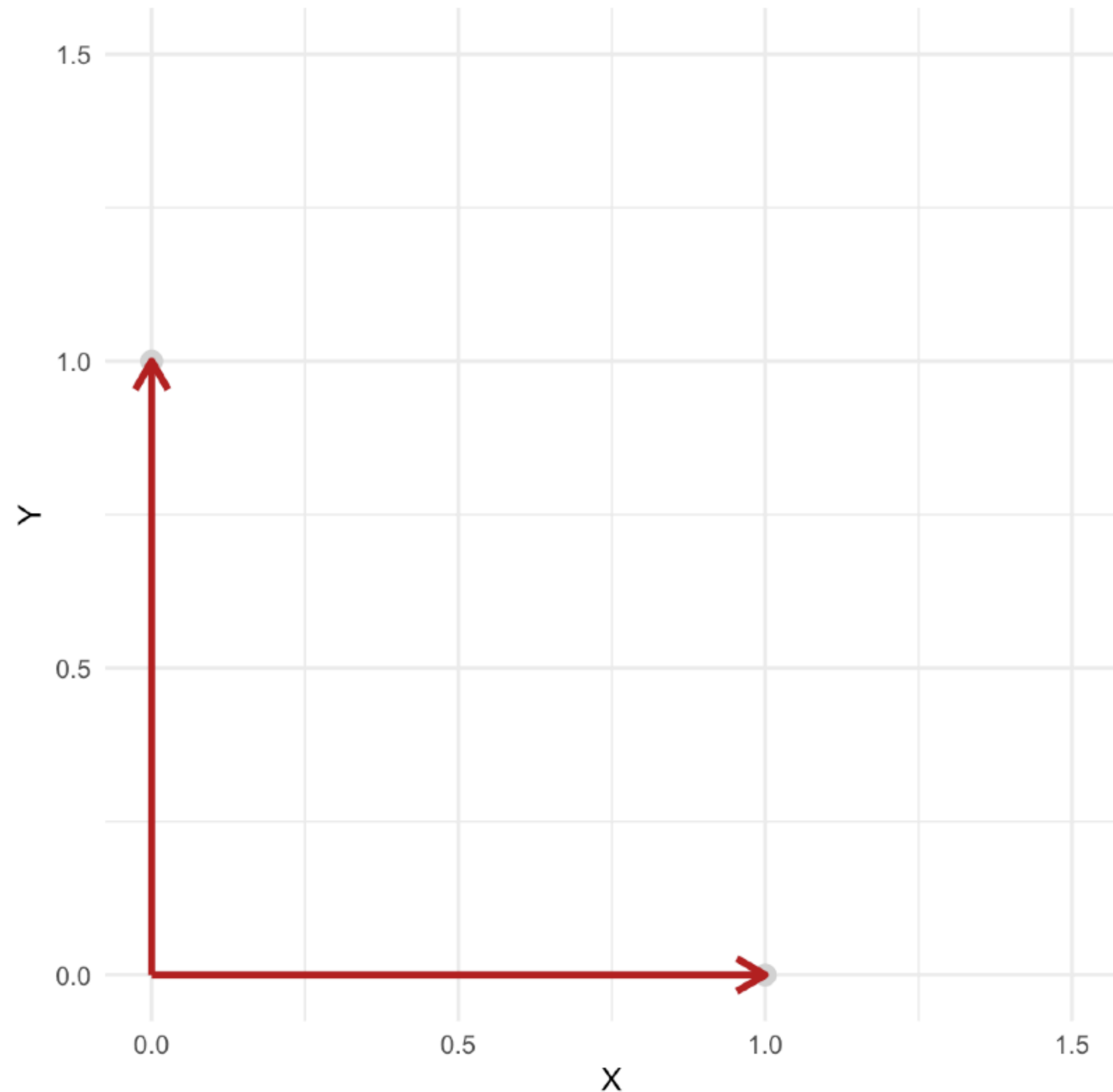
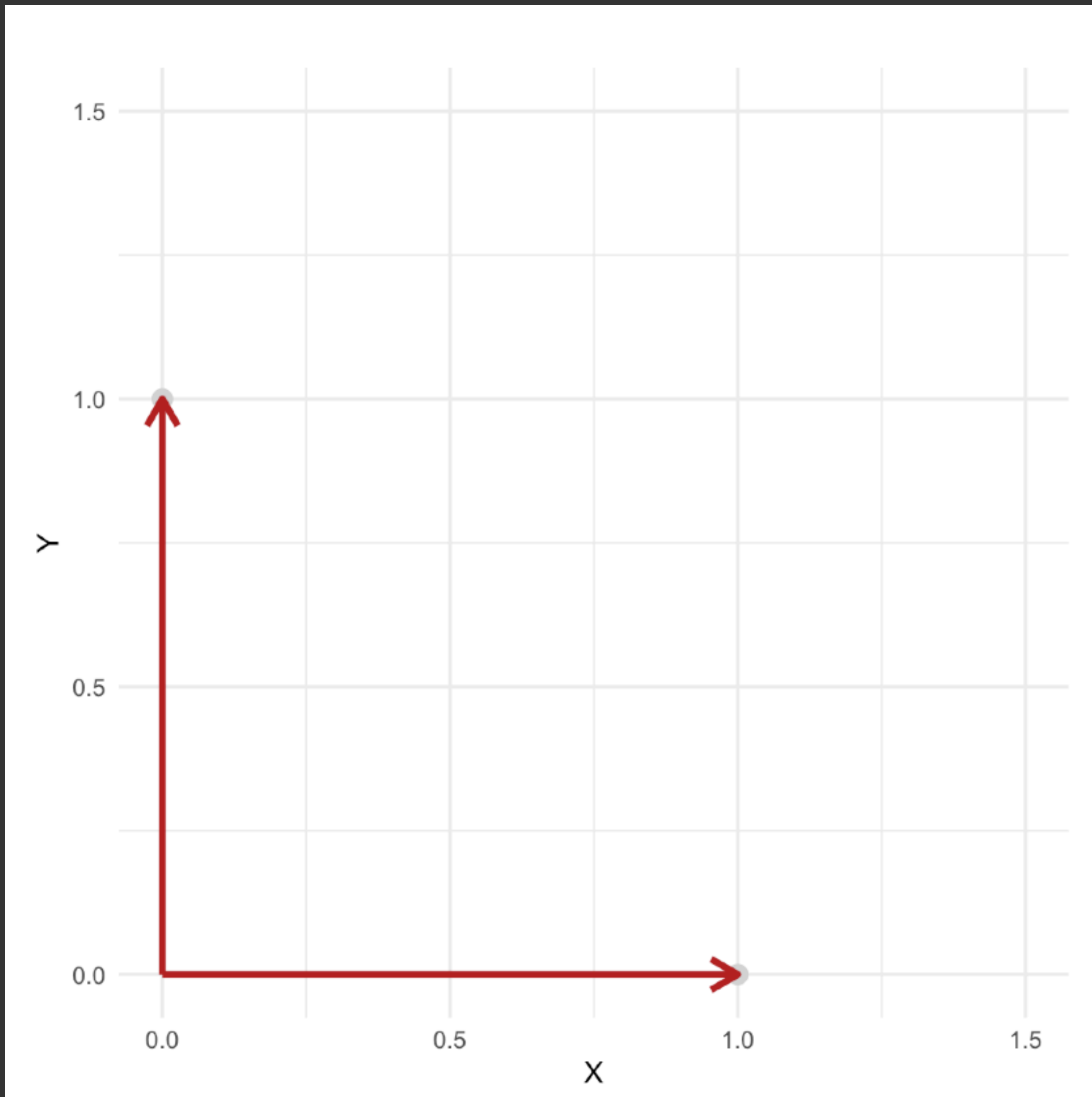


# example



- $\vec{x}$  and  $\vec{y}$  are unit vectors in the direction of the coordinate axes
- We are used to representing all vectors in  $\mathbb{R}^2$  as linear combinations of these vectors

# example



- $\vec{x}$  and  $\vec{y}$  are unit vectors in the direction of the coordinate axes
- We are used to representing all vectors in  $\mathbb{R}^2$  as linear combinations of these vectors
- We can actually choose any 2 linearly independent vectors in  $\mathbb{R}^2$  as basis vectors
- However, an orthogonal basis is the most convenient basis that one can hope for.