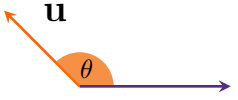
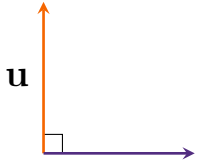
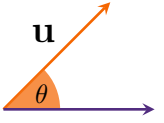
$\theta = \pi,\ \mathbf{u} \cdot \mathbf{v} = -|\mathbf{u}||\mathbf{v}|$



$\mathbf{u} \cdot \mathbf{v} = |\mathbf{u}||\mathbf{v}| \cos\theta < 0$



$\theta = \frac{\pi}{2},\ \mathbf{u} \cdot \mathbf{v} = 0$



$\mathbf{u} \cdot \mathbf{v} = |\mathbf{u}||\mathbf{v}| \cos\theta > 0$

$\theta = 0,\ \mathbf{u} \cdot \mathbf{v} = |\mathbf{u}||\mathbf{v}|$