

Rotation Counter Clockwise (CCW)

$$90^\circ - (x,y) \longrightarrow (-y,x)$$

$$180^\circ - (x,y) \longrightarrow (-x,-y)$$

$$270^\circ - (x,y) \longrightarrow (y,-x)$$

Clockwise

$$90^\circ - (x,y) \longrightarrow (y,-x)$$

$$180^\circ - (x,y) \longrightarrow (-x,-y)$$

$$270^\circ - (x,y) \longrightarrow (-y,x)$$