

Rotations – Multiples of 90°

$$\mathbf{R}_{(0,0) 90^\circ} (\mathbf{x}, \mathbf{y}) \longrightarrow (-\mathbf{y}, \mathbf{x})$$

$$\mathbf{R}_{(0,0) 180^\circ} (\mathbf{x}, \mathbf{y}) \longrightarrow (-\mathbf{x}, -\mathbf{y})$$

$$\mathbf{R}_{(0,0) 270^\circ} (\mathbf{x}, \mathbf{y}) \longrightarrow (\mathbf{y}, -\mathbf{x})$$

Example 1 Find the $\mathbf{R}_{(0,0) 180^\circ} (3, -2)$

Using the formula, both x and y change signs: $(-3, +2)$

Example 2 Find the $\mathbf{R}_{(0,0) 270^\circ} (4, -6)$

Using the formula, $(-6, -4)$