

Transformations

Rotation around the origin

$$R_{0, 90} (x, y) \rightarrow (-y, x)$$

$$R_{0, 180} (x, y) \rightarrow (-x, -y)$$

$$R_{0, 270} (x, y) \rightarrow (y, -x)$$

Reflections

$$\text{In } x\text{-axis } (x, y) \rightarrow (x, -y)$$

$$\text{In } y\text{-axis } (x, y) \rightarrow (-x, y)$$

$$\text{In line } y = x, (x, y) \rightarrow (y, x)$$

Composition of a reflection over two parallel lines is a translation (twice the distance between the parallel lines).

Composition of a reflection over intersecting lines is a rotation (twice the angle formed by the intersecting lines)

Translations

$$T_{a,b} (x, y) \rightarrow (x + a, y + b)$$