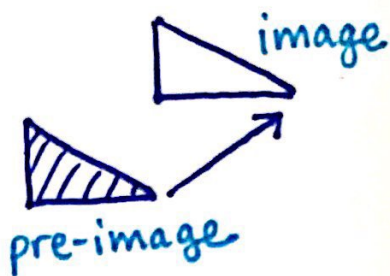


$$(p+y, q+x) = (p, x)_{2,3}$$

TRANSLATION

slide right 2
and up 3

slide



$$T_{2,3}(x,y) = (x+2, y+3)$$

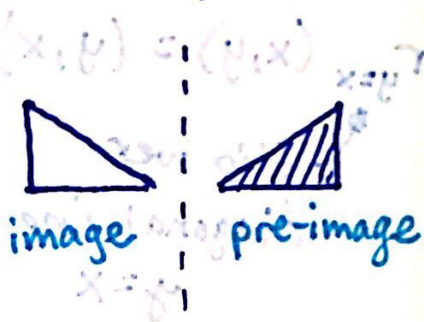
slide right 2
and up 3

$$(p, x) = (p, x)_{2,3}$$

REFLECTION

flip over the
y-axis

flip



$$r_{y\text{-axis}}(x,y) = (-x, y)$$

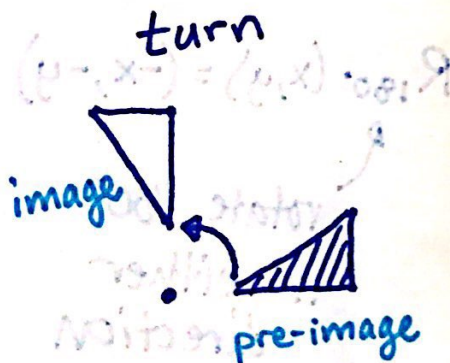
flip over
the y-axis

$$(x, y) = (y, x)_{90^\circ}$$

ROTATION

rotate 90°
counterclockwise
around the origin

turn



$$R_{90^\circ}(x,y) = (-y, x)$$

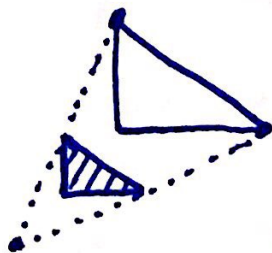
rotate 90°
counterclockwise
around the origin

$$(2p, 2q) = (p, q)_{2,2}$$

DILATION

dilate twice
as big from
center of dilation
(0,0)

scale



$$D_2(x,y) = (2x, 2y)$$

dilate twice
as big from
the origin