14-1 Mappings

April 16

A mapping is a correspondence between points.

A transformation is a mapping where each preimage point is mapped onto exactly one image point.

preimage ⟶ image

A ⟶ (maps onto) A′ ("A prime")

ex. 1 Given: a transformation $M: (x, y) \longrightarrow (x-1, y+5)$

(preimage: (x, y); image: $(x-1, y+5)$)

a) Find the image of $Q(-3, 4)$

$Q(-3,4) \longrightarrow Q'(-4, 9)$

b) Find the preimage of $R'(16, -9)$

$R(17, -14) \longrightarrow R'(16, -9)$

$16+1, -9-5$

$x-1=16$ $\quad y+5=-9$

ex. 2 Given: transformation $K: (x, y) \longrightarrow (x + 7, 3y - 1)$

a) Find the image of $S(3, -11)$ b) Find the preimage of $T'(-21, 26)$

$S(3, -11) \longrightarrow S'(10, -34)$

$3+7 \quad 3(-11)-1$

$T(x, y) \longrightarrow T'(-21, 26)$

$x+7, \; 3y-1$

$x+7=-21$

$3y-1=26$