1. **Affine Transformation**

Affine transformation is a linear mapping method that preserves points, straight lines and planes, ratio of distances, Set of parallel lines remains parallel, but do not preserves the angle between points.

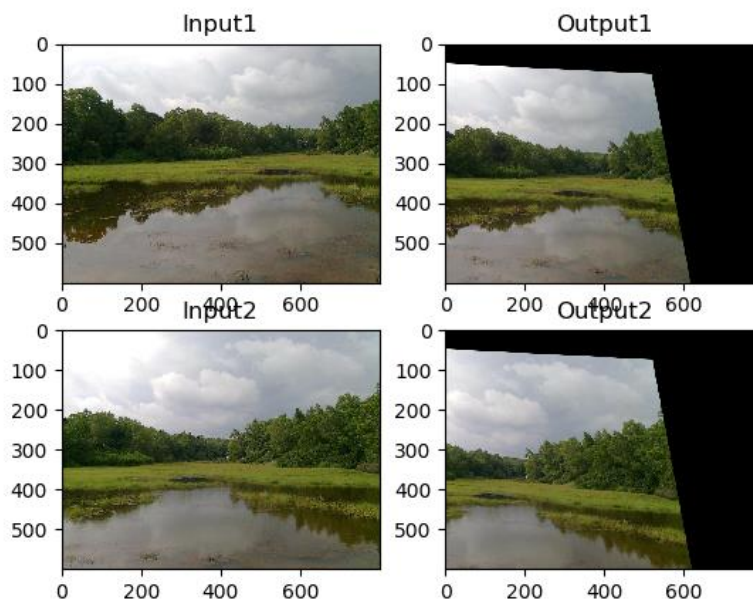To find the affine transformation we need to get the mapping matrix.

The affine transformation is represented by 2X3 matrix

$$\begin{matrix} a00 & a01 & b00 \\ a10 & a11 & b10 \end{matrix}$$

$$T = M.[x,y,1]^T$$

Mapping function:(M)

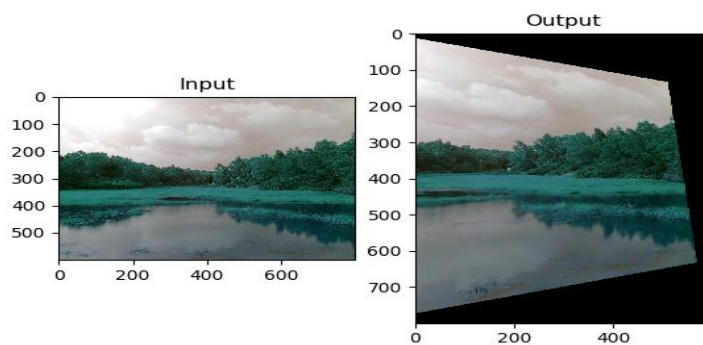$dst(x,y) = = src(M_{11}x + M_{12}y + M_{13}, M_{21}x + M_{22}y + M_{23})$

After applying affine transformation, the output of both images (img1,img2) are shows above. The corresponding points are selected manually. And mapping matrix is calculated using the function .The output shows the parallel lines are preserved, but the angles are not preserved.

Perspective Transformation (Homography)
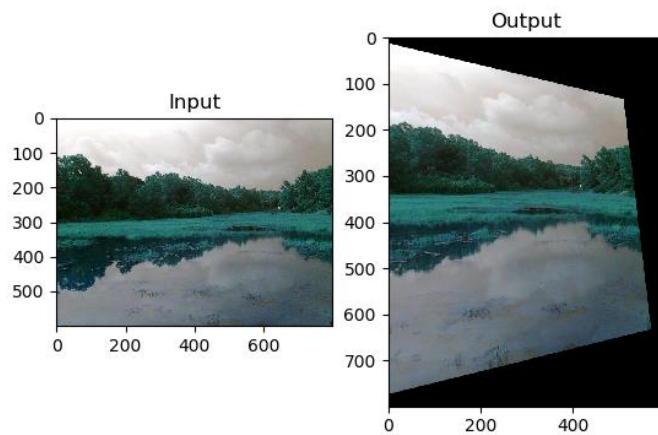
(a)

(b)

Original image (left) and same image with perspective projection transformation applied (right)

Inferences:
The corresponding points of the two images were taken and transformation is done.
The perspective transformations of the two given images are shown above. The output is a quadrilateral.