1. Try to deduce the transformation matrix which transforms the straight line P1 (x1,y1), P2 (X2,y2) on a two-dimensional plane to coincide with the x-axis.

Tips: Basic symmetric transformations are relative to the x axis and y axis respectively.

1. Following figure shows the basic symmetric transformations (对称变换) relative to the x axis:

(x,y)

(x,-y)

As shown in the above figure, given a point (x,y), after symmetric transformation relative to the x axis, the point will be transformed to the point (x, -y).

Similarly, after symmetric transformation relative to the y axis, a point (x,y) will be transformed to the point (-x, y).

1. Write down the transformation matrices for symmetric transformations relative to x and y aixs.
2. Given a triangular ABC, the coordinates of the vertices are A(1,2), B (5,2), C (3,5) respectively. Suppose A ', B ', C ' is reached after a symmetric transformation relative to the straight line y=4x+1. Try to calculate the coordinate values of A ', B ', C '. (It is required to use homogeneous coordinates and list the transformation matrix)

1. If the triangle ABC in the upper question rotates 90 degrees clockwise around the two-dimensional point (10,10) to reach A ', B ', C '. Try to calculate the coordinate values of A ', B ', C '.(It is required to use homogeneous coordinates and list the transformation matrix)