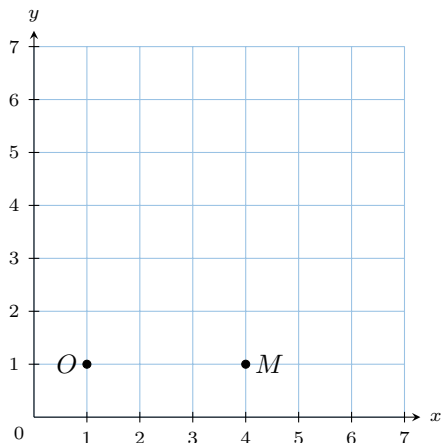


ROTATION

A WHAT IS A ROTATION?

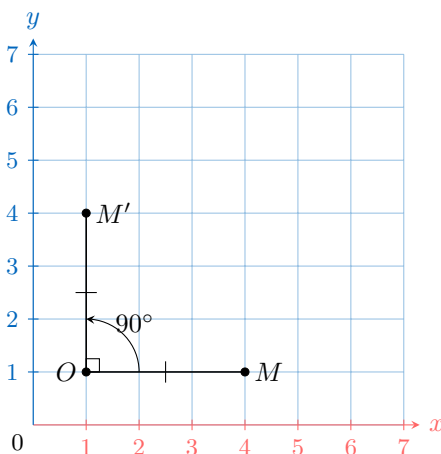
A.1 FINDING THE IMAGE OF A POINT UNDER A 90° ROTATION

Ex 1: Find the coordinates of the image of point M under a rotation of 90° counterclockwise about center O .



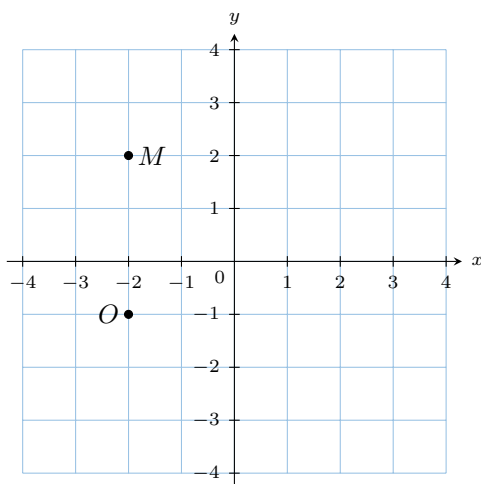
$$M'(\boxed{1}, \boxed{4})$$

Answer:



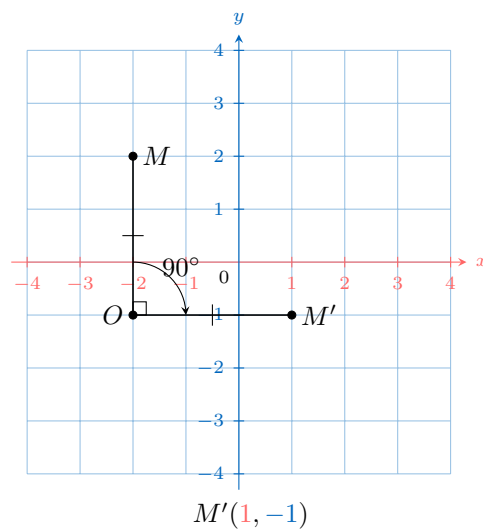
$$M'(1, 4)$$

Ex 2: Find the coordinates of the image of point M under a rotation of 90° clockwise about center O .



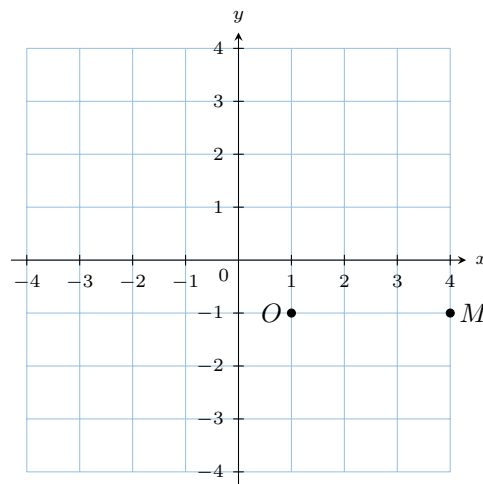
$$M'(\boxed{1}, \boxed{-1})$$

Answer:



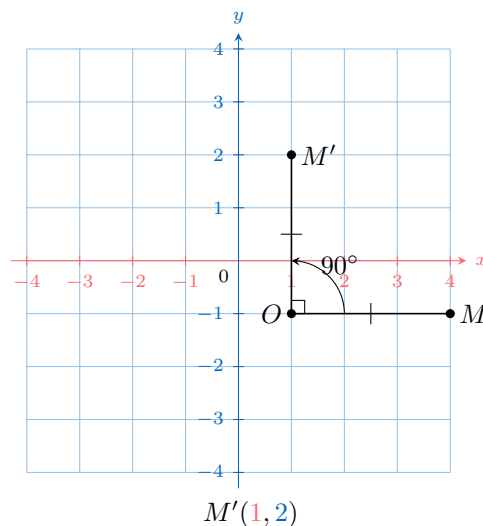
$$M'(1, -1)$$

Ex 3: Find the coordinates of the image of point M under a rotation of 90° counterclockwise about center O .



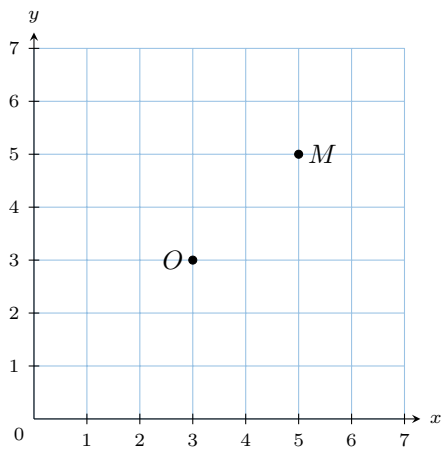
$$M'(\boxed{1}, \boxed{2})$$

Answer:



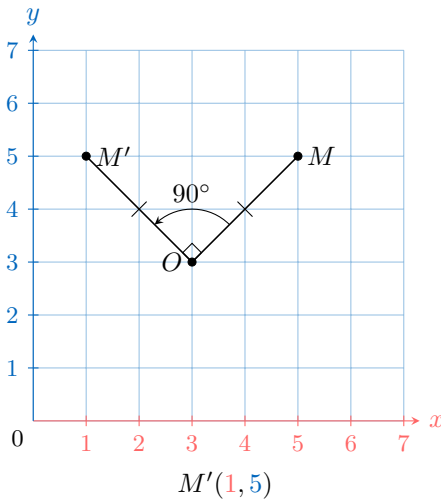
$$M'(1, 2)$$

Ex 4: Find the coordinates of the image of point M under a rotation of 90° counterclockwise about center O .



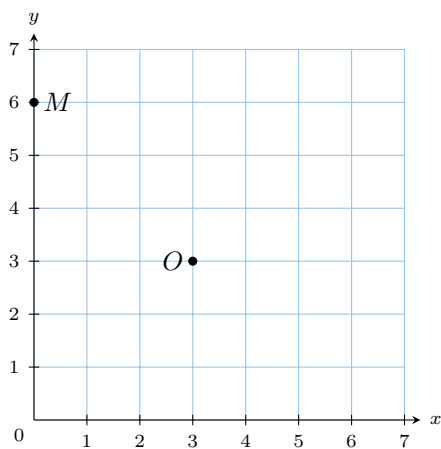
$$M'(\boxed{1}, \boxed{5})$$

Answer:



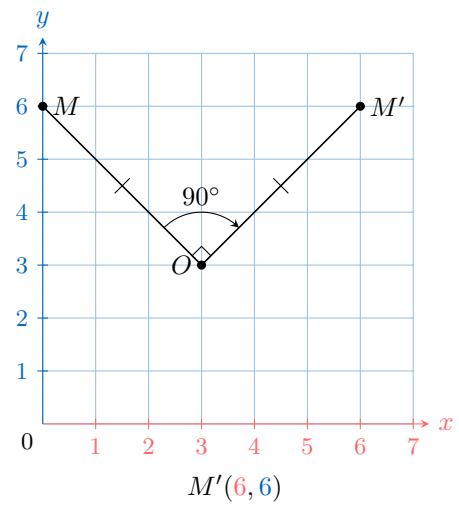
$$M'(\boxed{1}, \boxed{5})$$

Ex 5: Find the coordinates of the image of point M under a rotation of 90° clockwise about center O .



$$M'(\boxed{6}, \boxed{6})$$

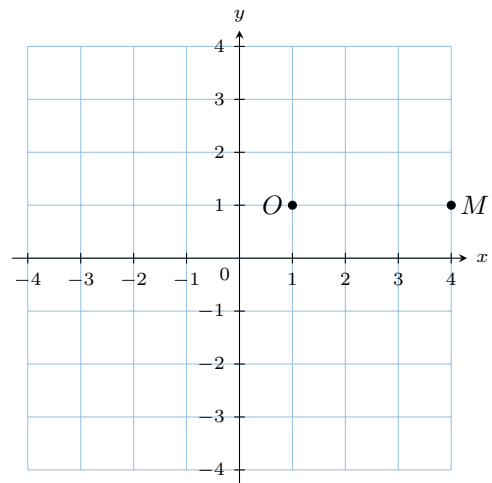
Answer:



$$M'(\boxed{6}, \boxed{6})$$

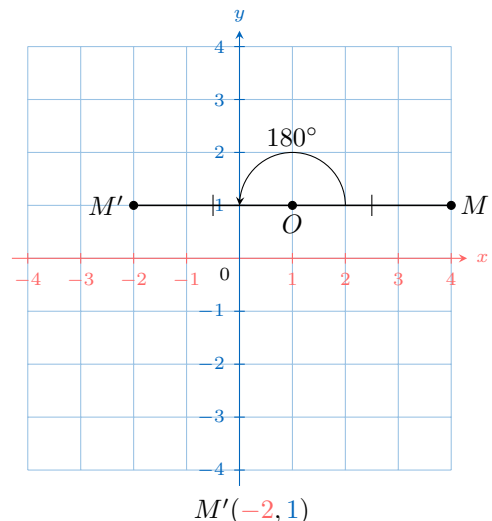
A.2 FINDING THE IMAGE OF A POINT UNDER A 180° ROTATION

Ex 6: Find the coordinates of the image of point M under a rotation of 180° about center O .



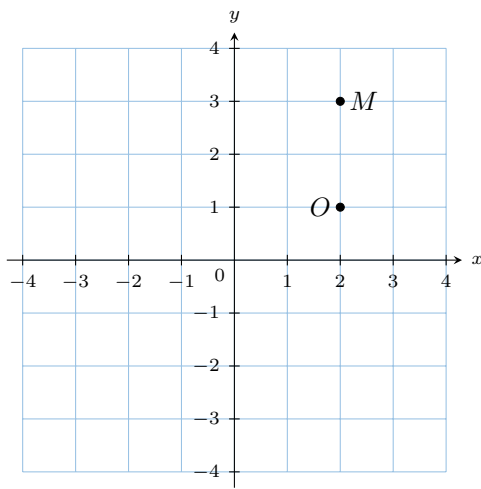
$$M'(\boxed{-2}, \boxed{1})$$

Answer:



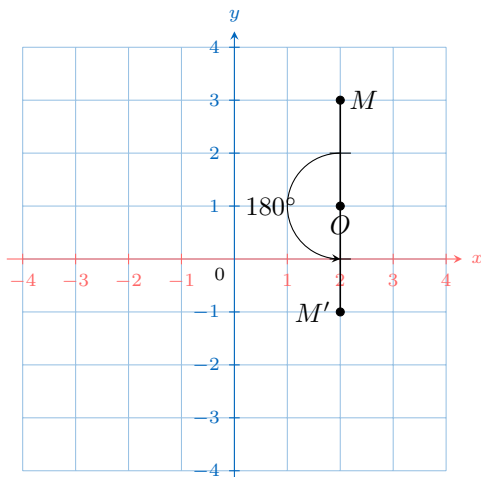
$$M'(\boxed{-2}, \boxed{1})$$

Ex 7: Find the coordinates of the image of point M under a rotation of 180° about center O .



$$M'(\boxed{2}, \boxed{-1})$$

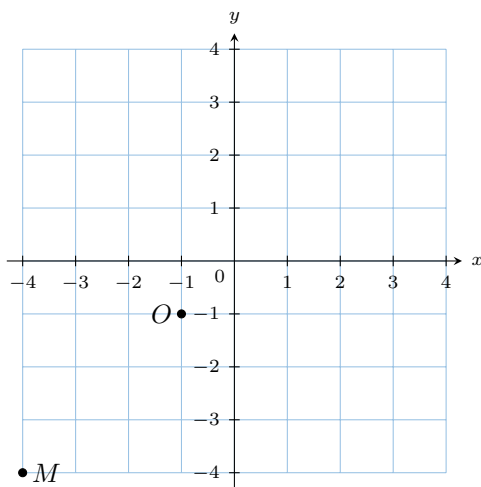
Answer:



$$M'(\boxed{2}, \boxed{-1})$$

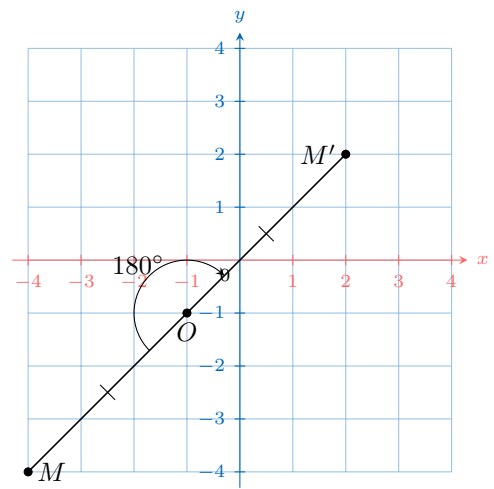
Ex 8: Find the coordinates of the image of point M under a rotation of 180° about center O .

Answer:



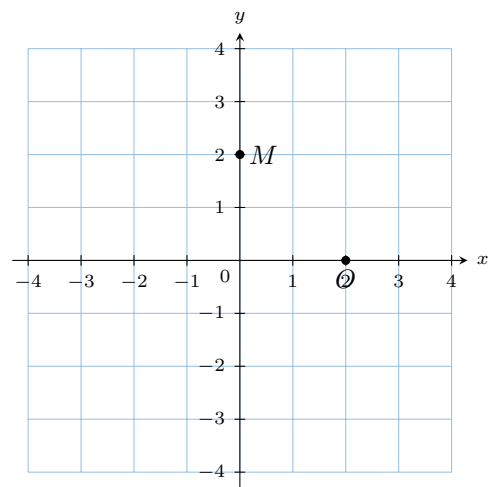
$$M'(\boxed{2}, \boxed{2})$$

Answer:

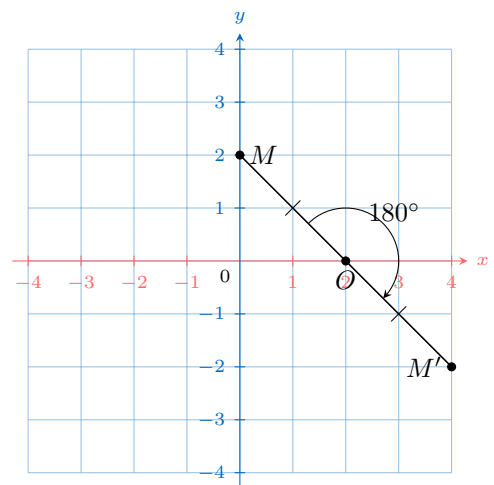


$$M'(\boxed{2}, \boxed{2})$$

Ex 9: Find the coordinates of the image of point M under a rotation of 180° about center O .



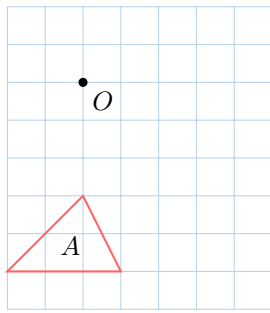
$$M'(\boxed{4}, \boxed{-2})$$



$$M'(\boxed{4}, \boxed{-2})$$

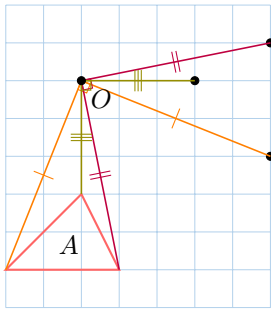
A.3 DRAWING IMAGES OF FIGURES

Ex 10: Draw the figure A' , the image of figure A under a rotation of 90° counterclockwise about center O .

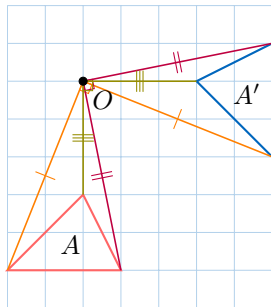


Answer:

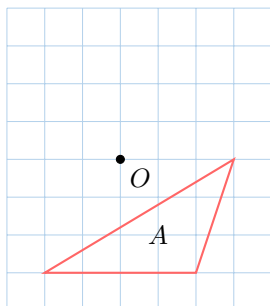
1. **Draw the image vertices:** For each vertex, locate its position relative to center O and rotate it 90° counterclockwise. Place the new points on the grid.



2. **Draw the image figure:** Connect the image vertices with lines in the same order as the original figure.

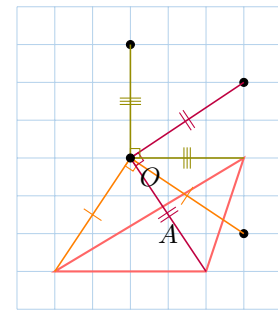


Ex 11: Draw the figure A' , the image of figure A under a rotation of 90° counterclockwise about center O .

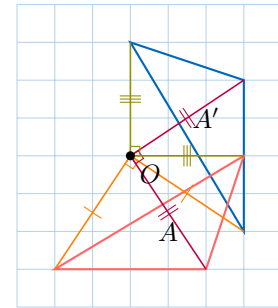


Answer:

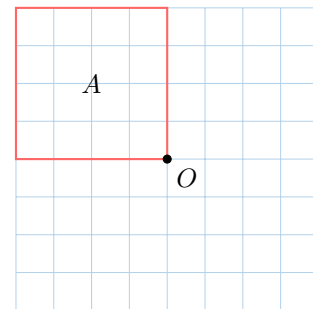
1. **Draw the image vertices:** For each vertex, locate its position relative to center O and rotate it 90° counterclockwise by swapping the relative coordinates and negating the new x-coordinate (i.e., for a point at (x, y) relative to $O(x_O, y_O)$, move to $(-y, x)$ relative to O). Place the new points on the grid.



2. **Draw the image figure:** Connect the image vertices with lines in the same order as the original figure.

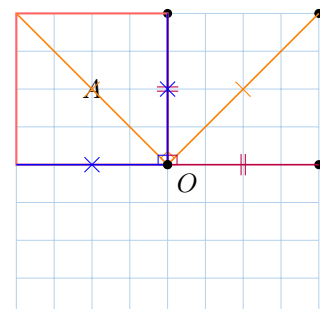


Ex 12: Draw the figure A' , the image of figure A under a rotation of 90° clockwise about center O .



Answer:

1. **Draw the image vertices:** For each vertex, locate its position relative to center O and rotate it 90° clockwise by swapping the relative coordinates and negating the new y-coordinate (i.e., for a point at (x, y) relative to $O(x_O, y_O)$, move to $(y, -x)$ relative to O). Place the new points on the grid.



2. **Draw the image figure:** Connect the image vertices with lines in the same order as the original figure.

