Rotations

spin or turn

CW → clockwise

CCW → counter clockwise

90° CW

270° CCW

180°

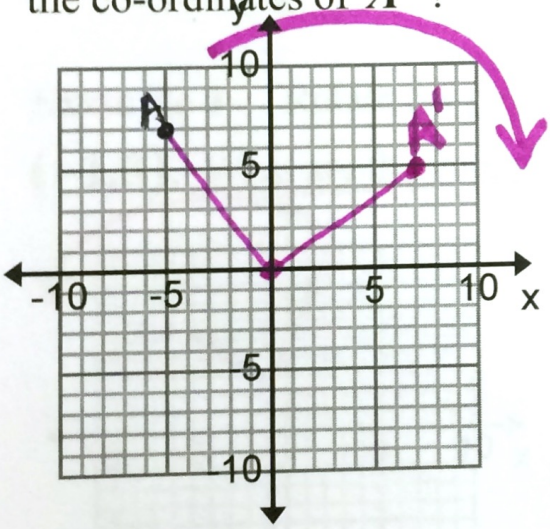
90° CCW

270° CW

Directions

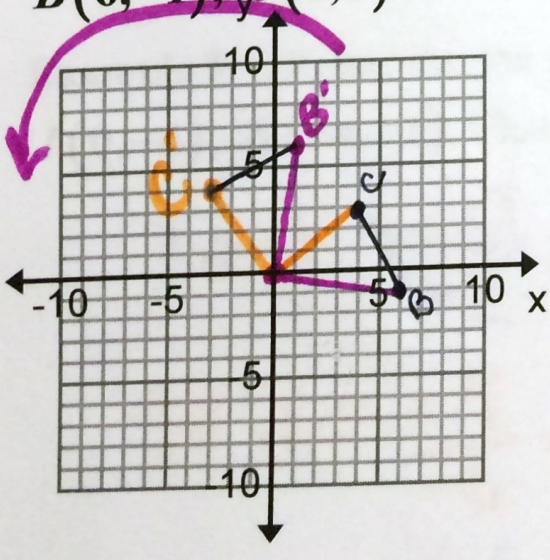
90° ∠s → have opp reciprocal slopes

Example 1 Rotate the point $A(-5,7)$ 90° clockwise around the origin. What are the co-ordinates of A' ?



To A = $\frac{7}{-5}$ opp rec = $\frac{5}{7}$

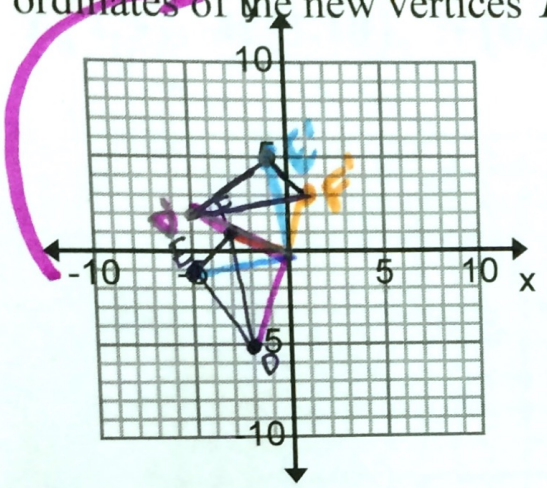
Example 2 Rotate line segment $\overline{BC}$ 90° counterclockwise around the origin $B(6,-1), C(4,3)$. What are the co-ordinates of $\overline{B'C'}$?



To B = $\frac{-1}{6}$ opp rec = $\frac{6}{1}$

To C = $\frac{3}{4}$ opp rec = $-\frac{4}{3}$

Example 3 Rotate triangle DEF 90° clockwise around the origin and list the co-ordinates of the new vertices $D(-2,-5)$, $E(-5,-1)$, $F(-3,1)$

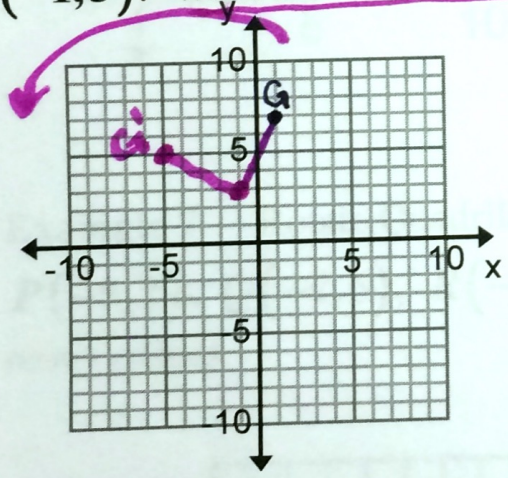


To D = $\frac{5}{2}$ opp rec = $-\frac{2}{5}$

To E = $\frac{-1}{-5} = \frac{1}{5}$ opp rec = $-\frac{5}{1}$

To F = $\frac{1}{-3}$ opp rec = $\frac{3}{1}$

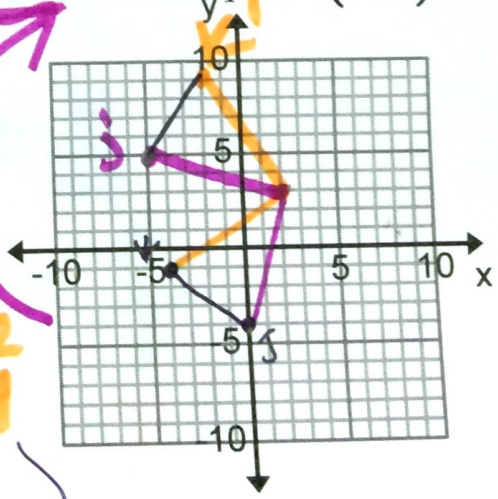
Example 4 Rotate the point $G(1,7)$ 90° counterclockwise around the point $(-1,3)$. What are the coordinates of G' ?



To G = $\frac{4}{2}$ opp rec $-\frac{2}{4}$

$G'(-5,5)$

Example 5 Rotate the line segment $\overline{JK}$ 90° clockwise around the point $(2,3)$ $J(0,-4)$, $K(-4,-1)$ What are the new coordinates?



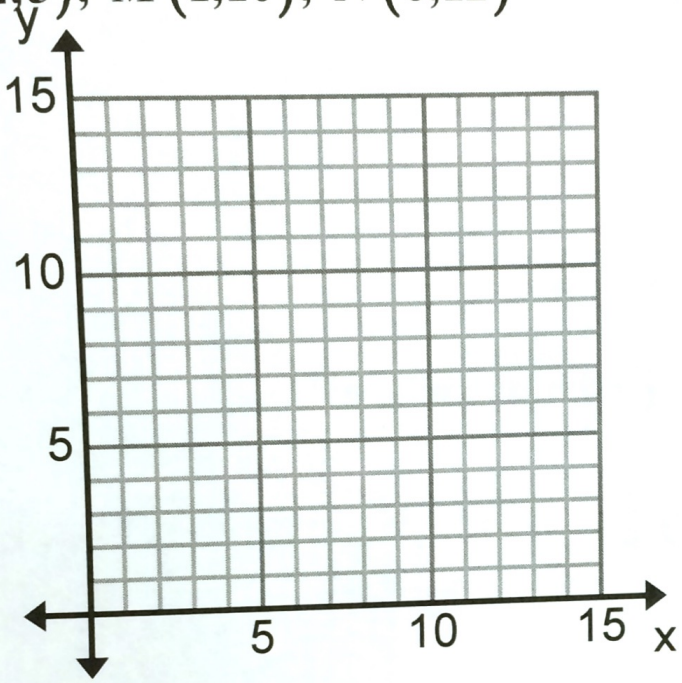
To J = $\frac{-7}{-2} = \frac{7}{2}$ opp rec = $-\frac{2}{7}$

To K = $\frac{-4}{-6} = \frac{4}{6}$ opp rec = $-\frac{6}{4}$

J'(-5, 5) K'(-2, 9)

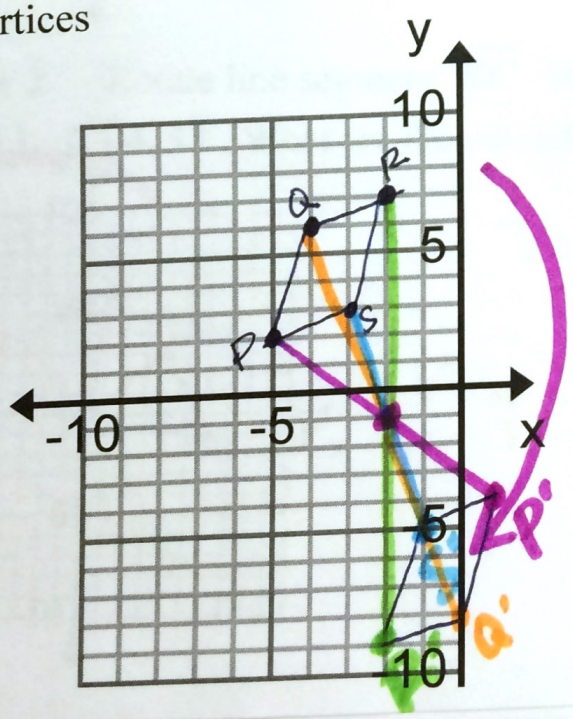
Example 6 Rotate Triangle LMN 90° clockwise around the point $(7,4)$

$L(4,5),\ M(1,10),\ N(6,12)$ State the coordinates of the new vertices.



Example 7 Rotate Quadrilateral $PQRS$ 180° around $(-2,-1)$

$P(-5,2),\ Q(-4,6),\ R(-2,7),\ S(-3,3)$ State the coordinates of the new vertices



180° = slope stays the same

To P = $\frac{3}{-3}$

To S = $\frac{4}{-1}$

To R = $\frac{8}{0}$

To Q = $\frac{7}{-2}$