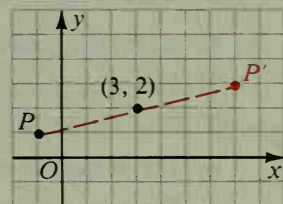


31. A rotation maps A to A' and B to B' . Construct the center of the rotation. (Hint: If the center is O , then $OA = OA'$ and $OB = OB'$.)

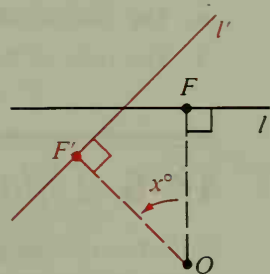


32. a. Draw a coordinate grid with origin O and plot the points $A(0, 3)$ and $B(4, 1)$.
 b. Plot A' and B' , the images of A and B by $\mathcal{R}_{O, 90^\circ}$.
 c. Compare the slopes of \overleftrightarrow{AB} and $\overleftrightarrow{A'B'}$. What does this tell you about these lines?
 d. Without using the distance formula, you know that $A'B' = AB$. State the theorem that tells you this.
 e. What reason supports the conclusion that $\triangle AOB$ and $\triangle A'OB'$ have the same area?
 f. Use your graph to find the image of (x, y) by $\mathcal{R}_{O, 90^\circ}$.
33. Repeat Exercise 32 using $\mathcal{R}_{O, 270^\circ}$.

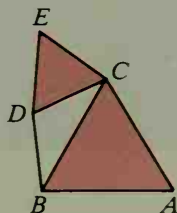
34. A half-turn about $(3, 2)$ maps P to P' . Where does this half-turn map the following points?
- | | | |
|-------------|--------------|-------------|
| a. P' | b. $(0, 0)$ | c. $(3, 0)$ |
| d. $(1, 4)$ | e. $(-2, 1)$ | f. (x, y) |



35. The rotation $\mathcal{R}_{O, x}$ maps line l to line l' . (You can think of rotating \overline{OF} , the perpendicular from O to l , through x° . Its image will be $\overline{OF'}$.) Show that one of the angles between l and l' has measure x .



36. $\triangle ABC$ and $\triangle DCE$ are equilateral.
- What rotation maps A to B and D to E ?
 - Why does $AD = BE$?
 - Find the measure of an acute angle between \overleftrightarrow{AD} and \overleftrightarrow{BE} . (Hint: See Exercise 35.)



37. $\triangle ABC$ and $\triangle DEC$ are isosceles right triangles.
- What rotation maps B to A and E to D ?
 - Why does $AD = BE$?
 - Explain why $\overleftrightarrow{AD} \perp \overleftrightarrow{BE}$. (Hint: See Exercise 35.)

