



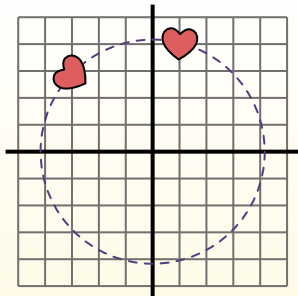
Rotate each shape. Answer as the new coordinates.

θ = Angle of Rotation

Rotation Formula

$$x1 = x \times \cos(\theta) - y \times \sin(\theta)$$

$$y1 = x \times \sin(\theta) + y \times \cos(\theta)$$



In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.

1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
 $y1 = 1 \times \sin(60) + 4 \times \cos(60)$

2. $x1 = 1 \times 0.5 - 4 \times 0.87$
 $y1 = 1 \times 0.87 + 4 \times 0.5$

3. $x1 = 0.5 - 3.48$
 $y1 = 0.87 + 2$

4. $x1 = -2.98$
 $y1 = 2.87$

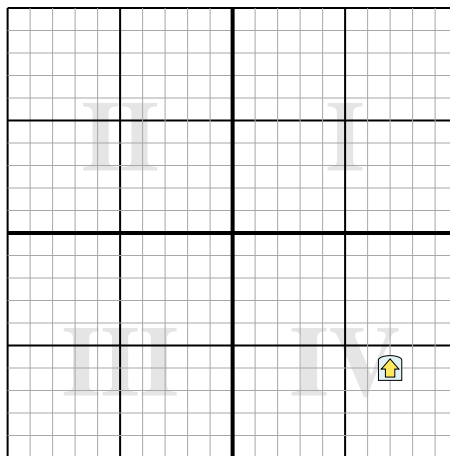
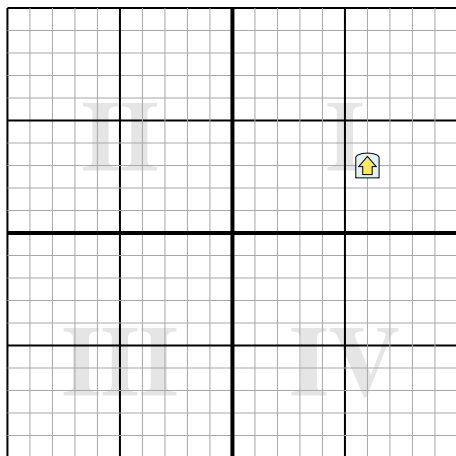
5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

Answers

- 1. _____
- 2. _____
- 3. _____
- 4. _____

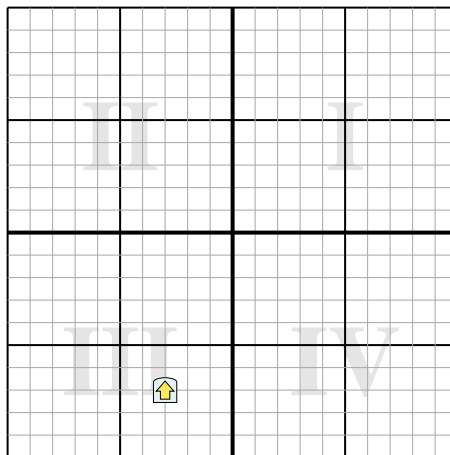
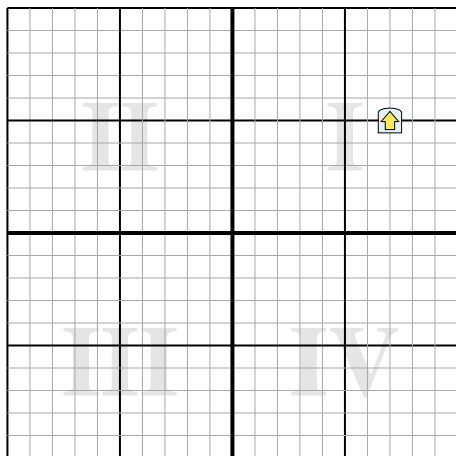
1) Rotate the shape 303° around the point (0,0).

2) Rotate the shape -182° around the point (0,0).



3) Rotate the shape 251° around the point (0,0).

4) Rotate the shape 98° around the point (0,0).





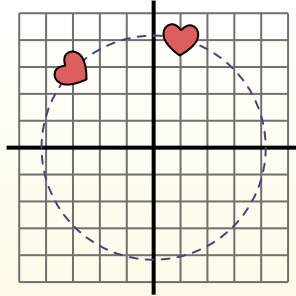
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$$1. \begin{aligned} x1 &= 1 \times \cos(60) - 4 \times \sin(60) \\ y1 &= 1 \times \sin(60) + 4 \times \cos(60) \end{aligned}$$

$$2. \begin{aligned} x1 &= 1 \times 0.5 - 4 \times 0.87 \\ y1 &= 1 \times 0.87 + 4 \times 0.5 \end{aligned}$$

$$3. \begin{aligned} x1 &= 0.5 - 3.48 \\ y1 &= 0.87 + 2 \end{aligned}$$

$$4. \begin{aligned} x1 &= -2.98 \\ y1 &= 2.87 \end{aligned}$$

5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

Answers

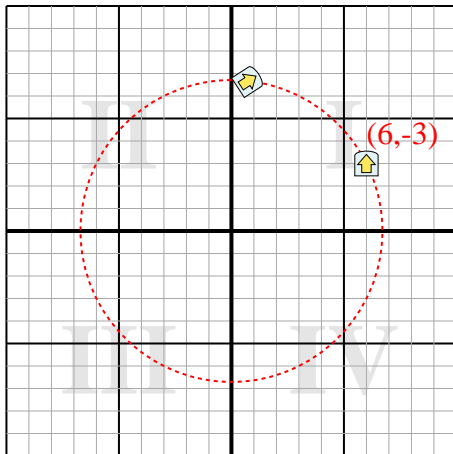
1. (0.8,6.7)

2. (-7.2,5.8)

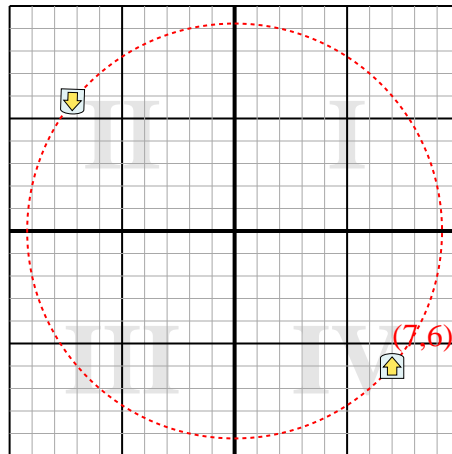
3. (-7,5)

4. (-6.5,3.9)

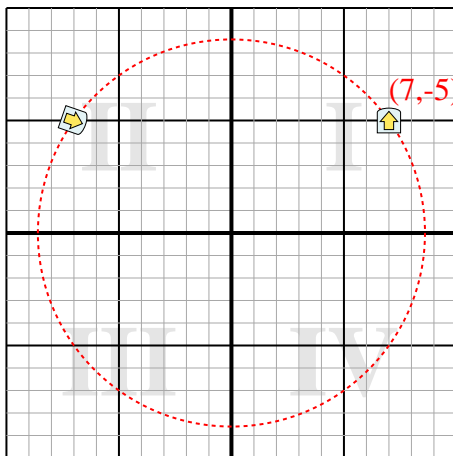
1) Rotate the shape 303° around the point (0,0).



2) Rotate the shape -182° around the point (0,0).



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4) Rotate the shape 98° around the point (0,0).

