



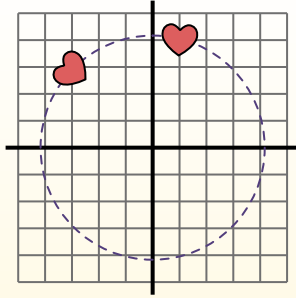
Rotate each shape. Answer as the new coordinates.

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

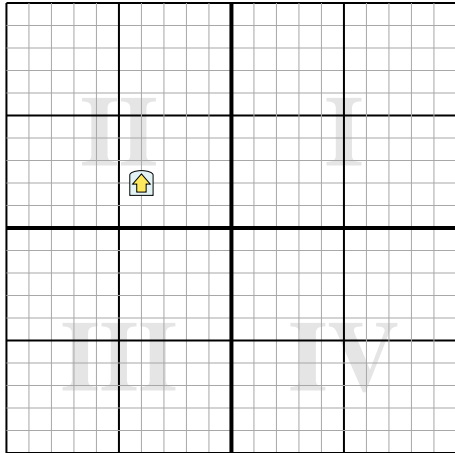
4. $x1 = -2.98$
 $y1 = 2.87$

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

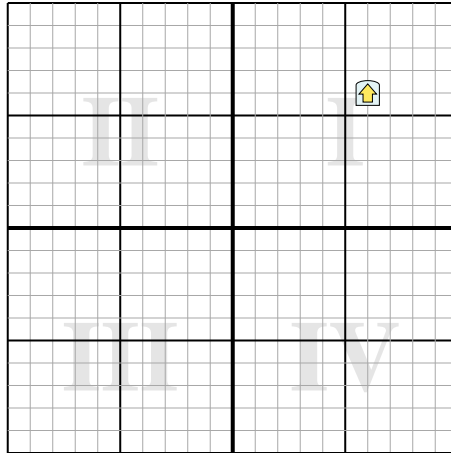
Answers

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

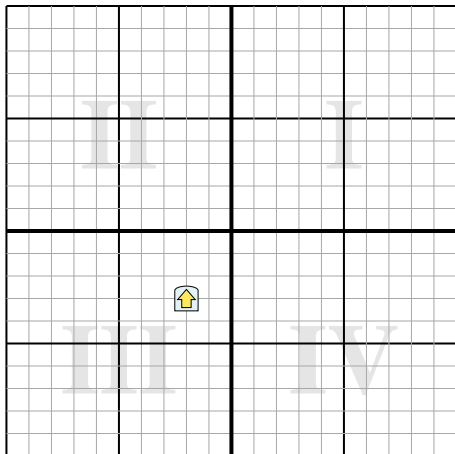
1) Rotate the shape -293° around the point (0,0).



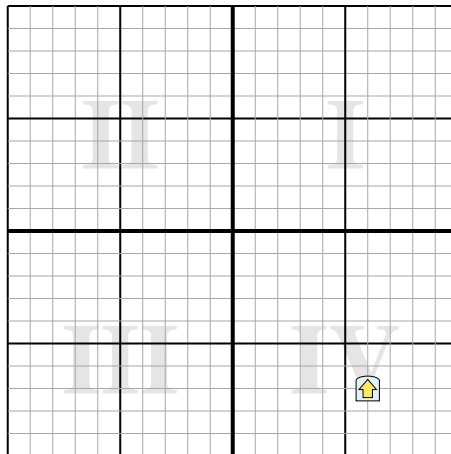
2) Rotate the shape -121° around the point (0,0).



3) Rotate the shape -196° around the point (0,0).



4) Rotate the shape 145° around the point (0,0).





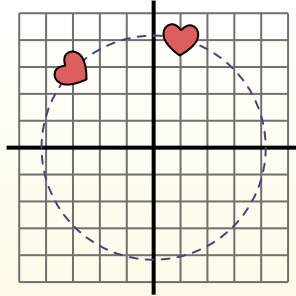
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 $y1 = 0.87 + 2$

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 $y1 = 2.87$

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

Answers

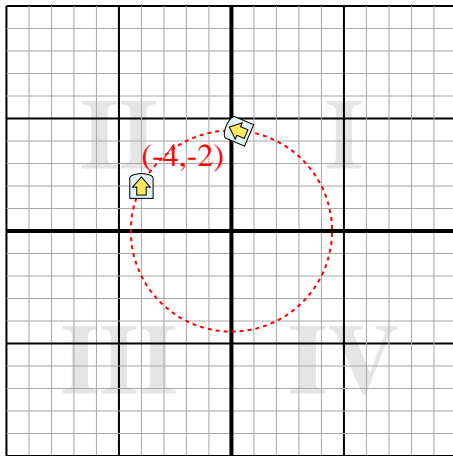
1. **(0.3,4.5)**

2. **(-8.2,2.1)**

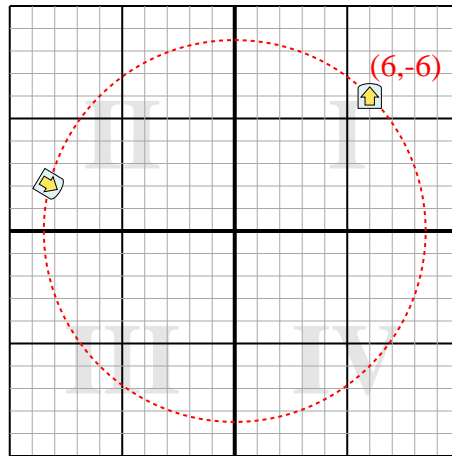
3. **(1.1,3.4)**

4. **(-8.9,2.3)**

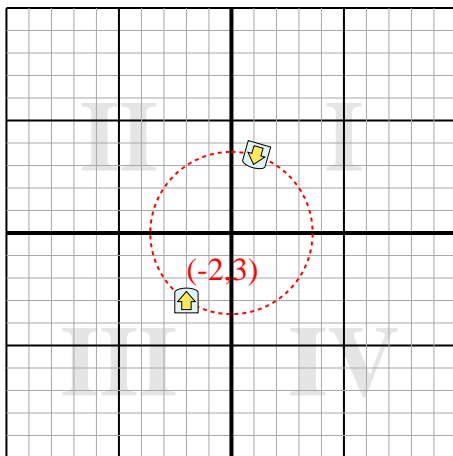
1) Rotate the shape -293° around the point (0,0).



2) Rotate the shape -121° around the point (0,0).



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4) Rotate the shape 145° around the point (0,0).

