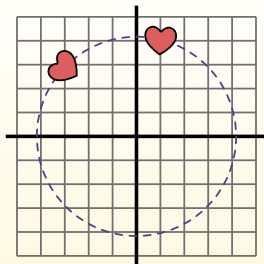


**Rotate each shape. Answer as the new coordinates.** θ = Angle of Rotation**Rotation Formula**

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

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

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

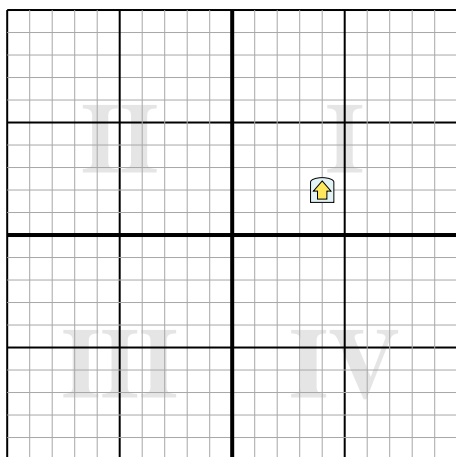
1. _____

2. _____

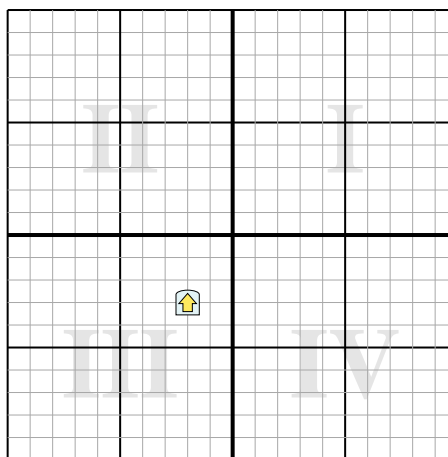
3. _____

4. _____

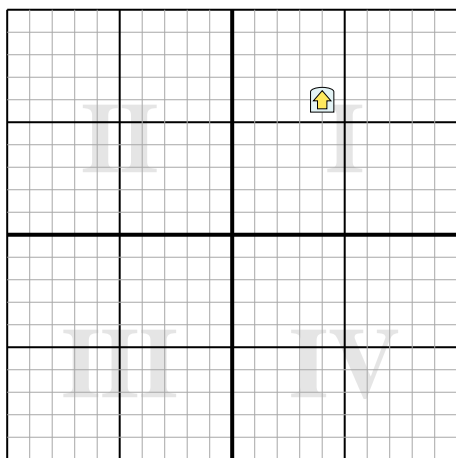
- 1) Rotate the shape -230° around the point (0,0).



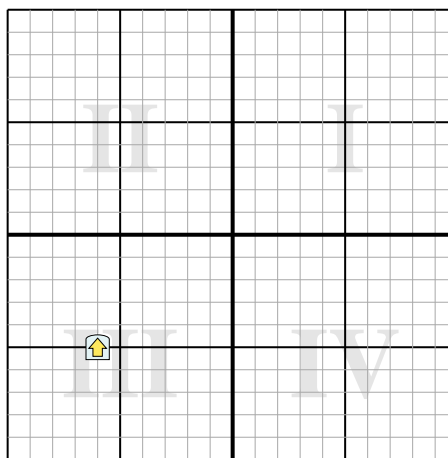
- 2) Rotate the shape 149° around the point (0,0).



- 3) Rotate the shape -184° around the point (0,0).



- 4) Rotate the shape 216° around the point (0,0).





Rotate each shape. Answer as the new coordinates.

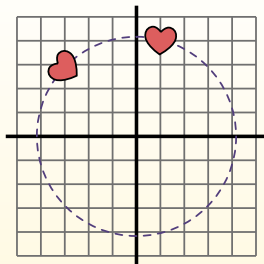
θ = Angle of Rotation

Rotation Formula

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

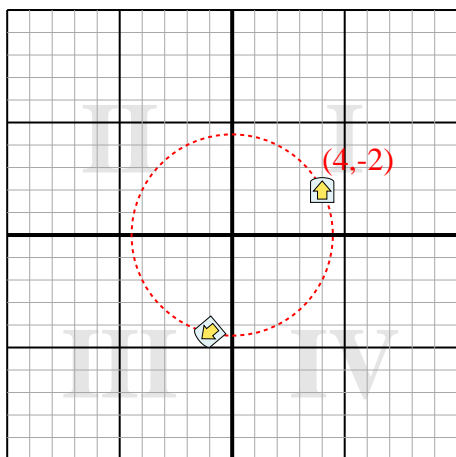


- $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
 $y1 = 1 \times \sin(60) + 4 \times \cos(60)$
- $x1 = 1 \times 0.5 - 4 \times 0.87$
 $y1 = 1 \times 0.87 + 4 \times 0.5$
- $x1 = 0.5 - 3.48$
 $y1 = 0.87 + 2$
- $x1 = -2.98$
 $y1 = 2.87$
- Looking at shape, we can see that rotated 60° it is at $(-2.98, 2.87)$.

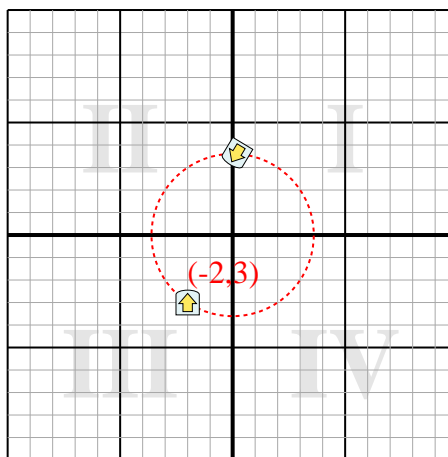
Answers

- $(-1, -4.3)$**
- $(0.2, 3.6)$**
- $(-3.6, -6.3)$**
- $(7.8, 0.5)$**

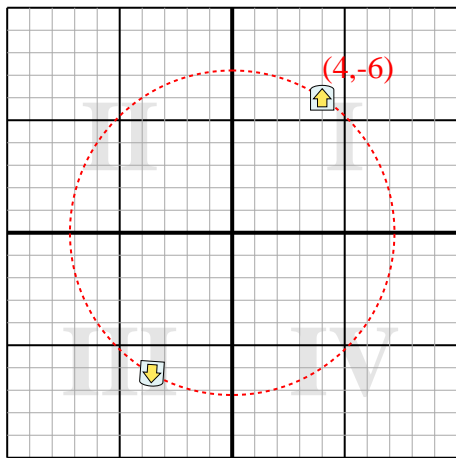
- 1) Rotate the shape -230° around the point (0,0).



- 2) Rotate the shape 149° around the point (0,0).



- 3) Rotate the shape -184° around the point (0,0).



- 4) Rotate the shape 216° around the point (0,0).

