



Rotate each shape. Answer as the new coordinates.

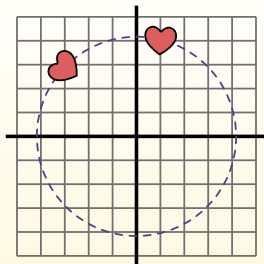
θ = Angle of Rotation

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° .

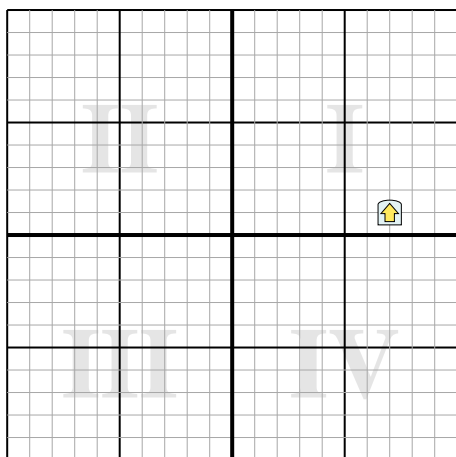


- $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
 $y1 = 1 \times \sin(60) + 4 \times \cos(60)$
- $x1 = 1 \times 0.5 - 4 \times 0.87$
 $y1 = 1 \times 0.87 + 4 \times 0.5$
- $x1 = 0.5 - 3.48$
 $y1 = 0.87 + 2$
- $x1 = -2.98$
 $y1 = 2.87$
- Looking at shape, we can see that rotated 60° it is at $(-2.98, 2.87)$.

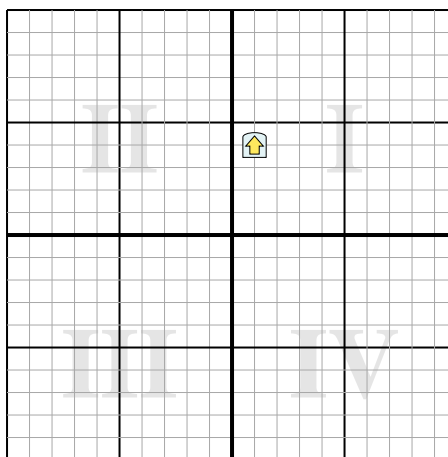
Answers

- _____
- _____
- _____
- _____

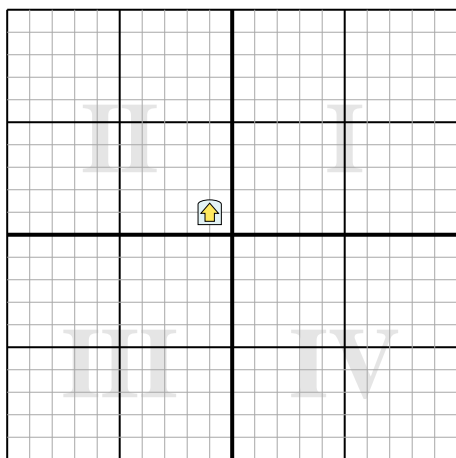
- 1) Rotate the shape 76° around the point (0,0).



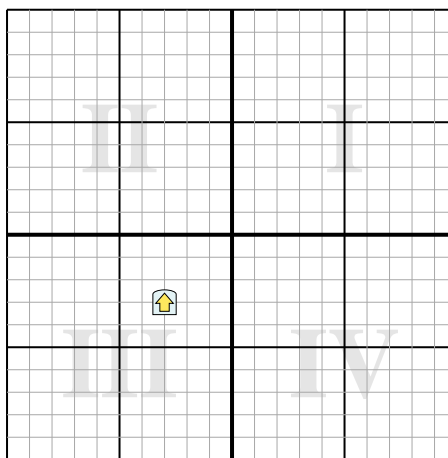
- 2) Rotate the shape 192° around the point (0,0).



- 3) Rotate the shape 290° around the point (0,0).



- 4) Rotate the shape -62° around the point (0,0).

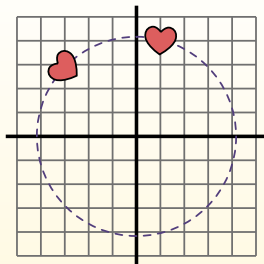


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$$2. \quad x1 = 1 \times 0.5 - 4 \times 0.87$$

$$y1 = 1 \times 0.87 + 4 \times 0.5$$

$$3. \quad x1 = 0.5 - 3.48$$

$$y1 = 0.87 + 2$$

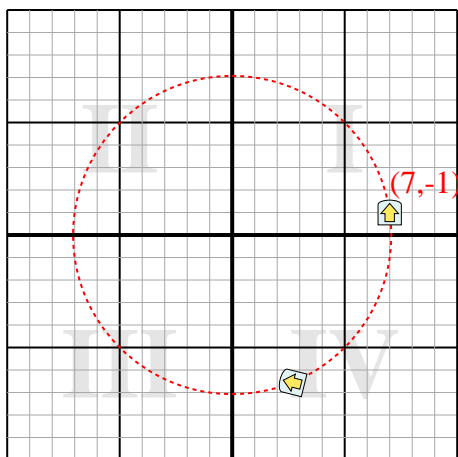
$$4. \quad x1 = -2.98$$

$$y1 = 2.87$$

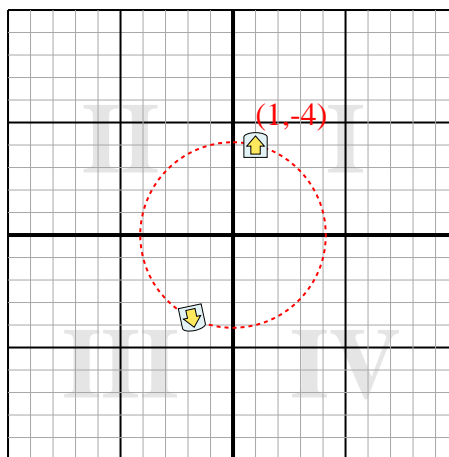
5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

Answers1. **(2.7,-6.6)**2. **(-1.8,-3.7)**3. **(-1.3,-0.6)**4. **(1.2,-4.1)**

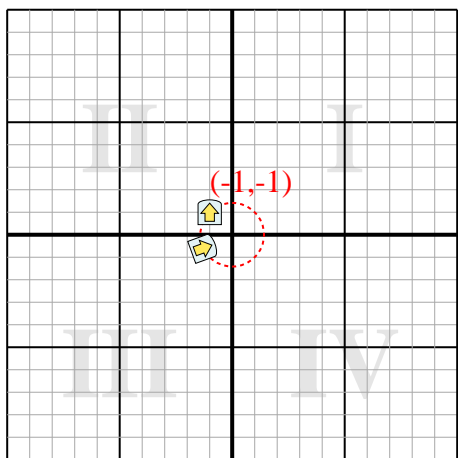
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