Rotate each shape. Answer as the new coordinates.

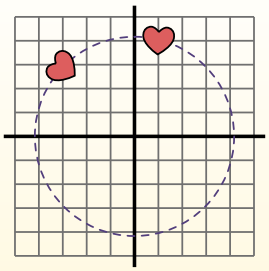
θ = Angle of Rotation

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

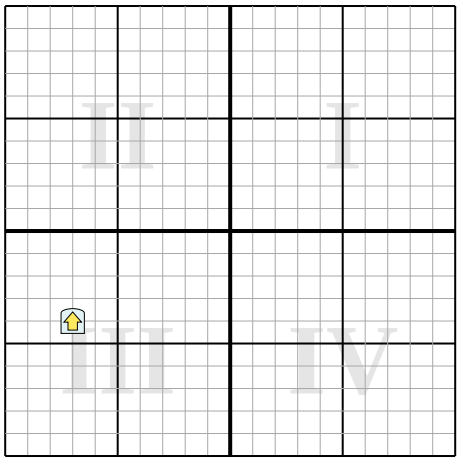
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

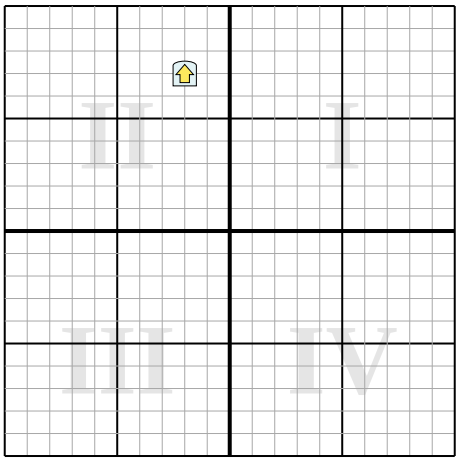
4. $x1 = -2.98$
$y1 = 2.87$

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

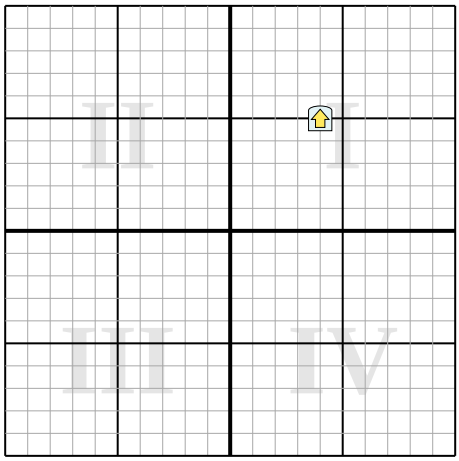
1) Rotate the shape 319° around the point (0,0)..



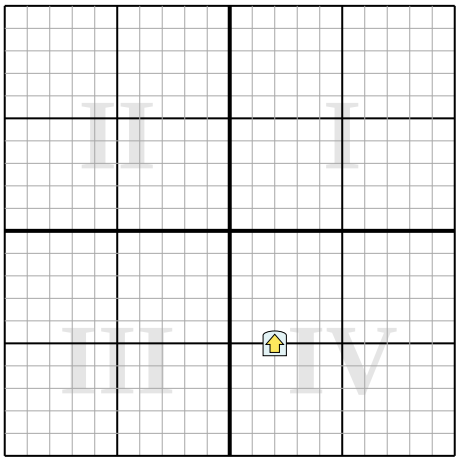
2) Rotate the shape -309° around the point (0,0)..



3) Rotate the shape -59° around the point (0,0)..



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



Answers

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

Rotate each shape. Answer as the new coordinates.

θ = Angle of Rotation

Rotation Formula
x1 = x×cos(θ) - y×sin(θ)
y1 = x×sin(θ) + y×cos(θ)

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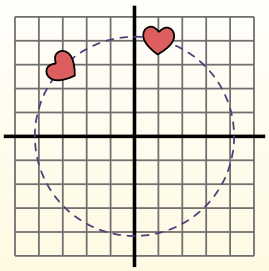

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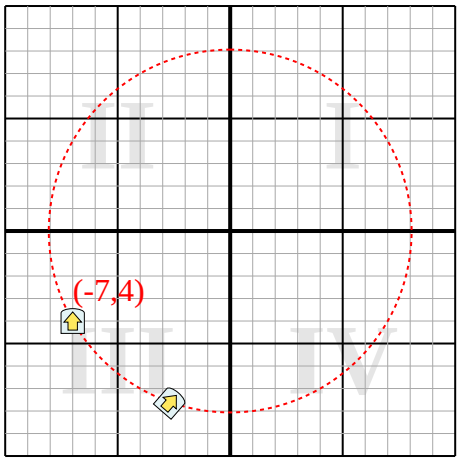

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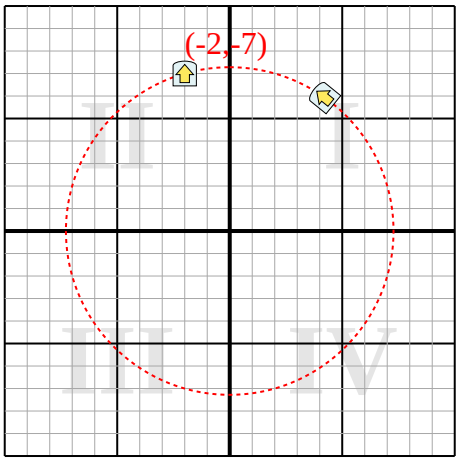

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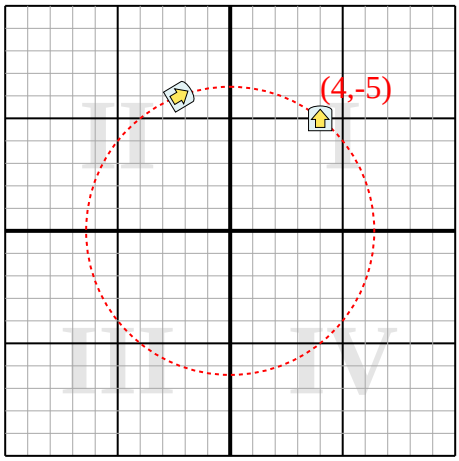

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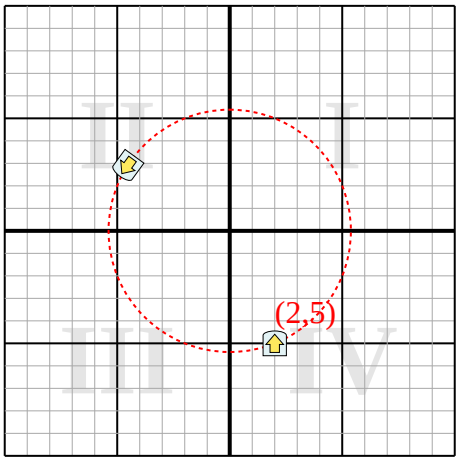

Answers

1. **(-2.7,-7.6)**
2. **(4.2,6)**
3. **(-2.2,6)**
4. **(-4.6,2.9)**