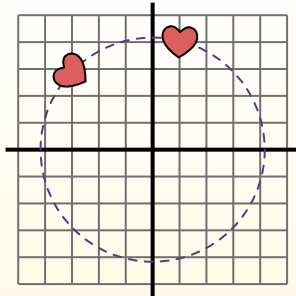


**Rotate each shape. Answer as the new coordinates.** θ = Angle of Rotation**Rotation Formula**

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

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

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



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

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

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

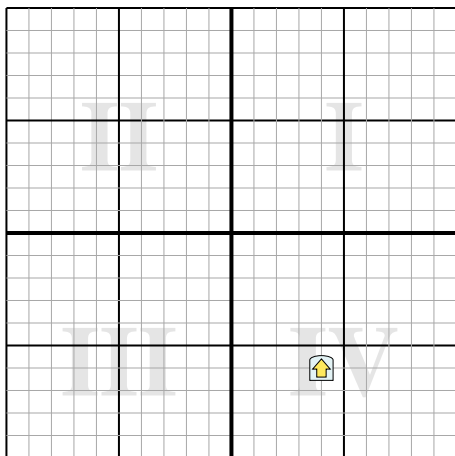
$$\begin{aligned} 4. \quad x1 &= -2.98 \\ y1 &= 2.87 \end{aligned}$$

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

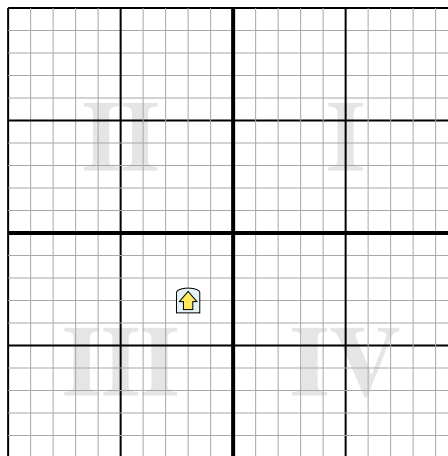
Answers

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

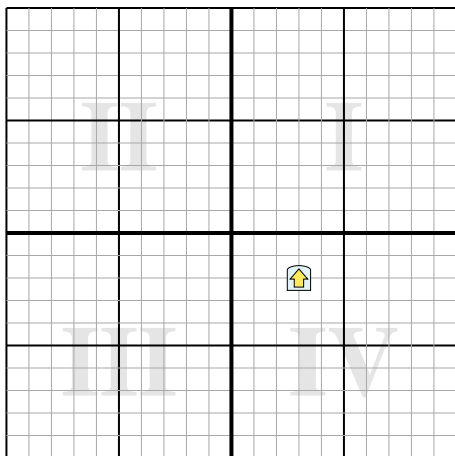
- 1) Rotate the shape -234° around the point (0,0).



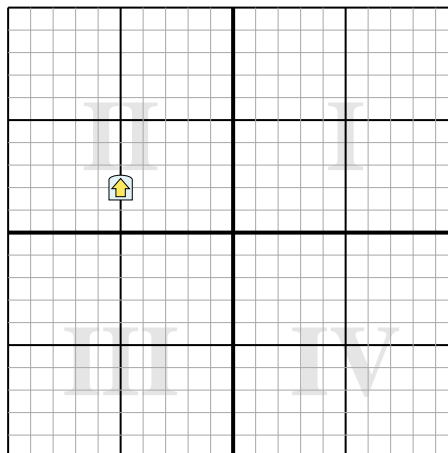
- 2) Rotate the shape 137° around the point (0,0).



- 3) Rotate the shape 234° around the point (0,0).



- 4) Rotate the shape 45° around the point (0,0).





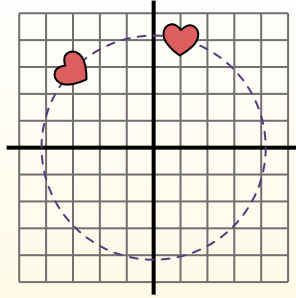
Rotate each shape. Answer as the new coordinates.

 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° .



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

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

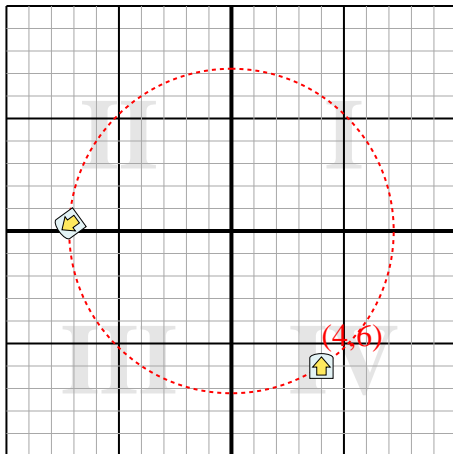
$$3. \begin{aligned} x1 &= 0.5 - 3.48 \\ y1 &= 0.87 + 2 \end{aligned}$$

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

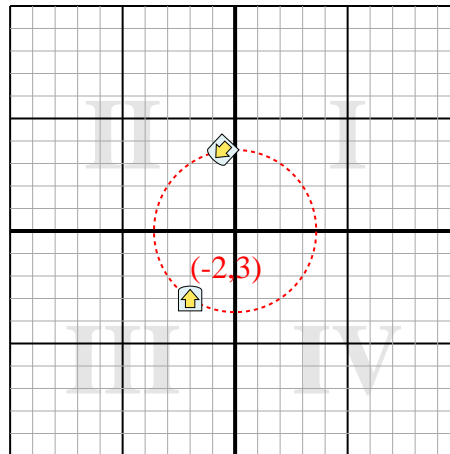
5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

Answers1. **(-7.2,0.3)**2. **(-0.6,3.6)**3. **(-0.1,3.6)**4. **(-2.1,4.9)**

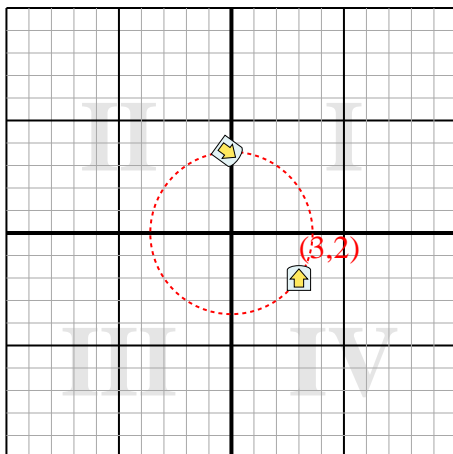
1) Rotate the shape -234° around the point (0,0).



2) Rotate the shape 137° around the point (0,0).



3) Rotate the shape 234° around the point (0,0).



4) Rotate the shape 45° around the point (0,0).

