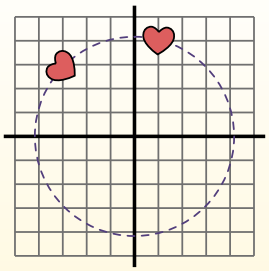
**Rotate each shape. Answer as the new coordinates.**

θ = Angle of Rotation

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

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×cos(60) - 4×sin(60)
y1 = 1×sin(60) + 4×cos(60)

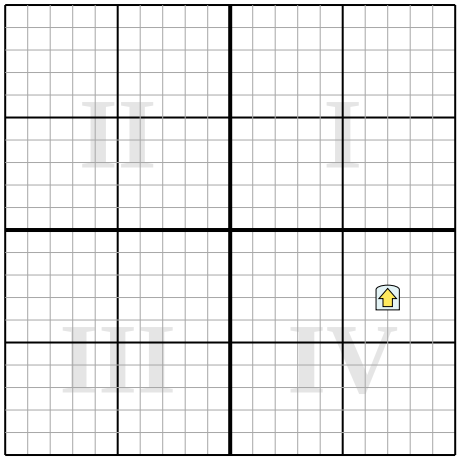
**2.** x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

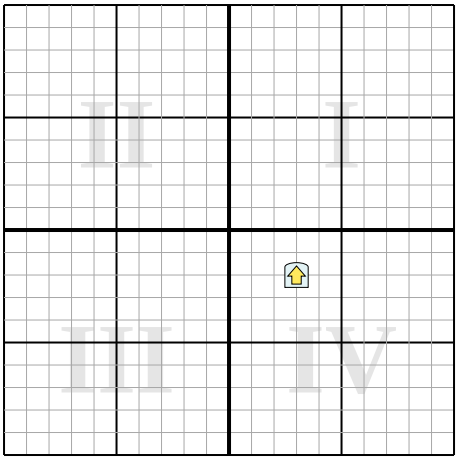
**4.** x1 = -2.98
y1 = 2.87

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

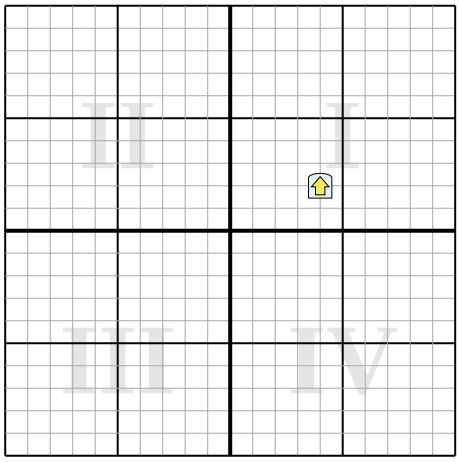
**1)** Rotate the shape 226° around the point (0,0).



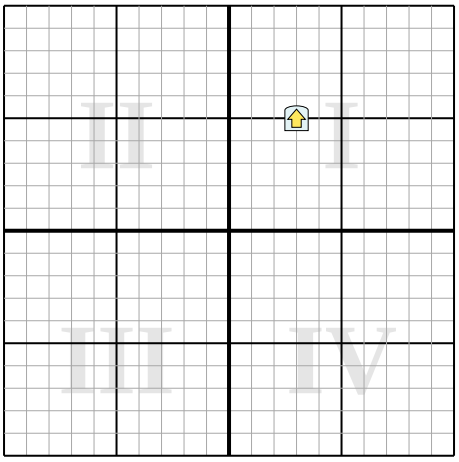

**2)** Rotate the shape -221° around the point (0,0).




**3)** Rotate the shape 75° around the point (0,0).




**4)** Rotate the shape 82° around the point (0,0).




## Answers

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

**Rotate each shape. Answer as the new coordinates.**

θ = Angle of Rotation

**Rotation Formula**
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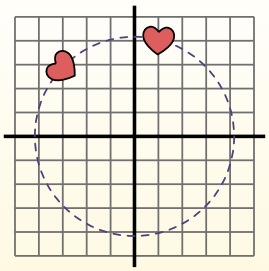

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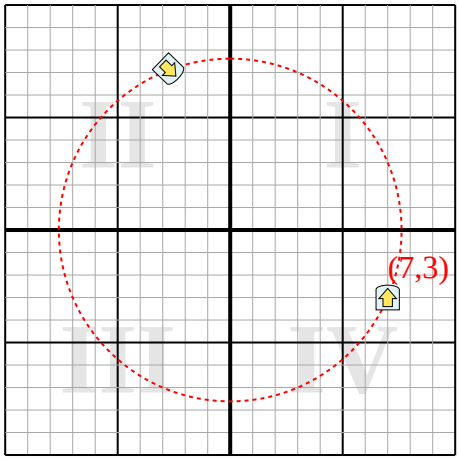
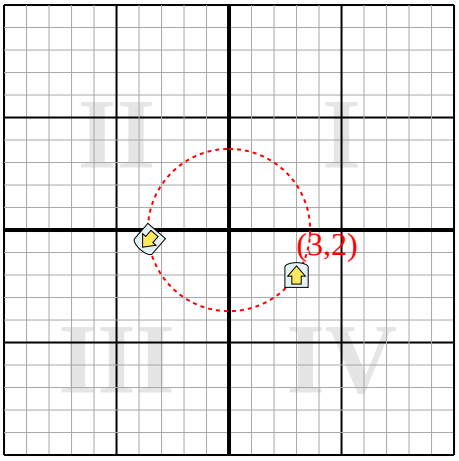
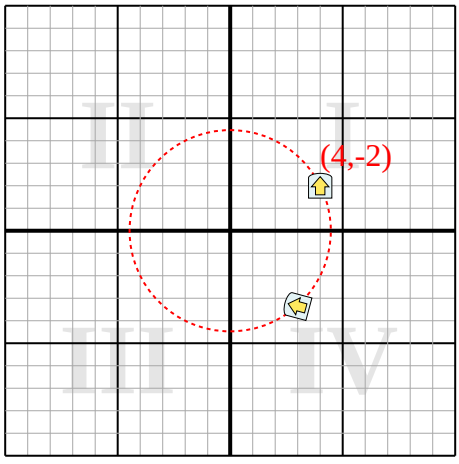
**1)** Rotate the shape 226° around the point (0,0).



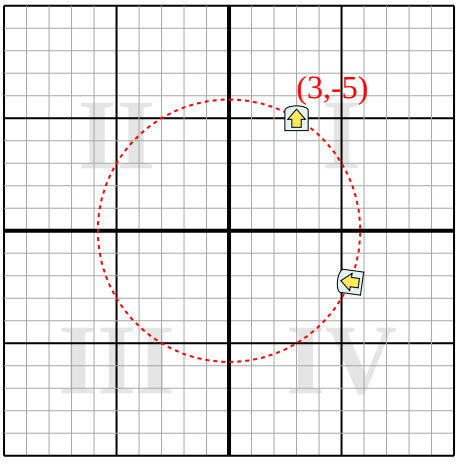

**2)** Rotate the shape -221° around the point (0,0).




**3)** Rotate the shape 75° around the point (0,0).




**4)** Rotate the shape 82° around the point (0,0).




**Answers**

1. **(-2.7,7.1)**
2. **(-3.6,-0.5)**
3. **(3,-3.3)**
4. **(5.4,-2.3)**