Rotating Around Axis

Name: _____
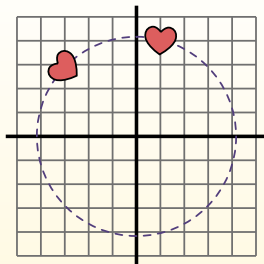
Rotate each shape. Answer as the new coordinates.

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).
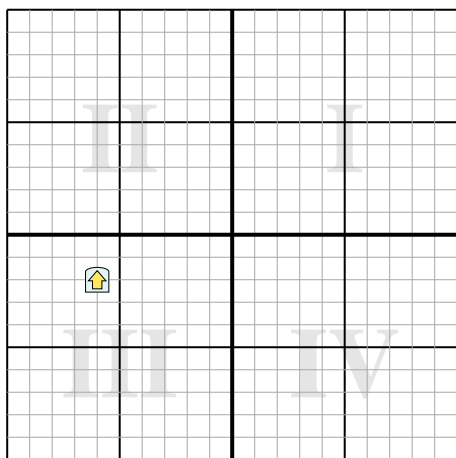
Answers

1. _____

2. _____

3. _____

4. _____

1) Rotate the shape 282° around the point (0,0).
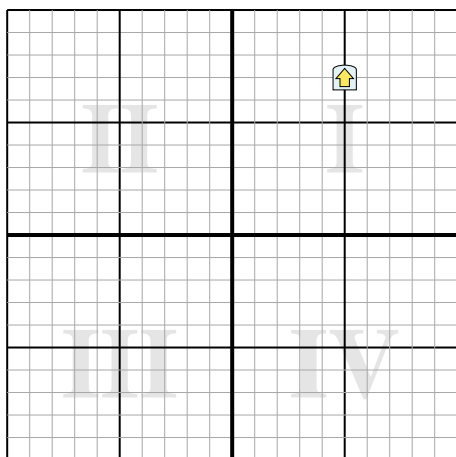
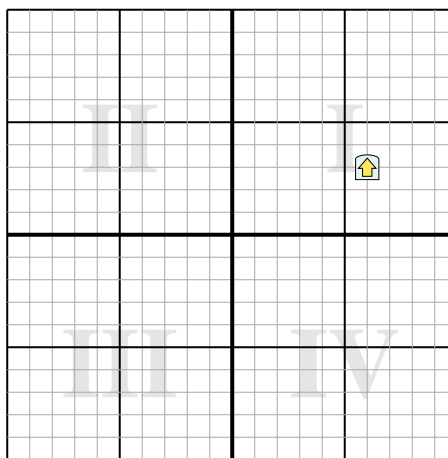**2)** Rotate the shape 208° around the point (0,0).
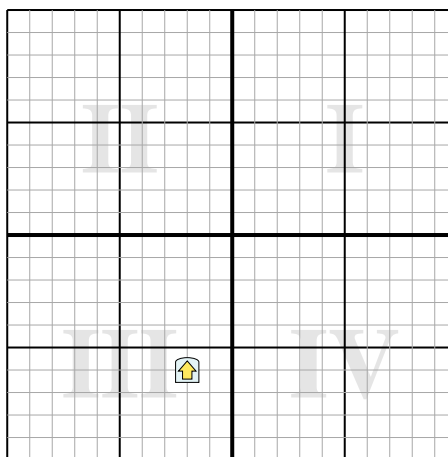
3) Rotate the shape 152° around the point (0,0).

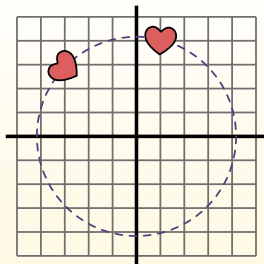**4)** Rotate the shape 157° around the point (0,0).

Math

1-4 | 75 | 50 | 25 | 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. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$

2. $x1 = 1 \times 0.5 - 4 \times 0.87$
   $y1 = 1 \times 0.87 + 4 \times 0.5$
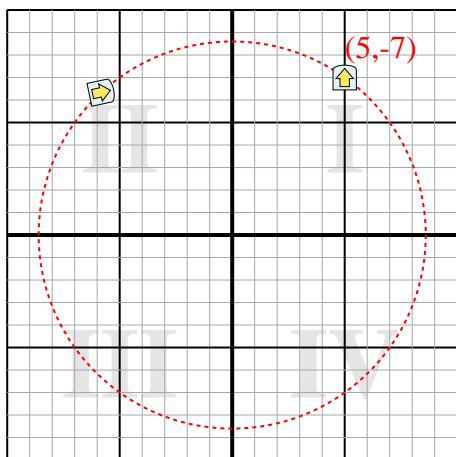
3. $x1 = 0.5 - 3.48$
   $y1 = 0.87 + 2$

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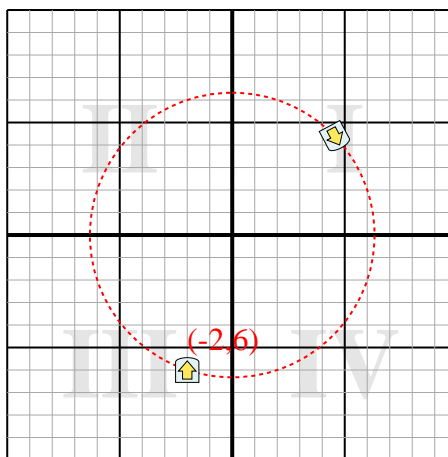 $y1 = 2.87$

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

Answers

1. **(-5.8,6.3)**
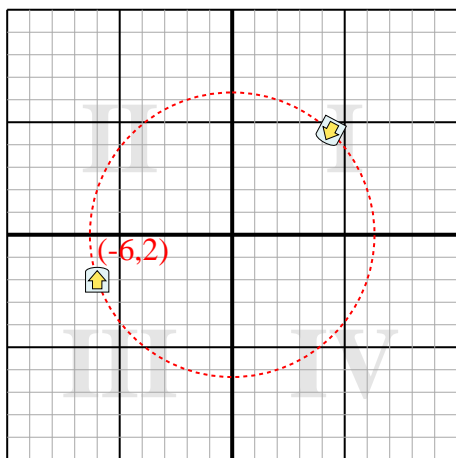
2. **(4.6,4.4)**

3. **(4.4,4.6)**

4. **(-4.4,-5.1)**

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1) Rotate the shape 282° around the point (0,0).

(5,-7)

2) Rotate the shape 208° around the point (0,0).

(-2,6)

3) Rotate the shape 152° around the point (0,0).

(-6,2)

4) Rotate the shape 157° around the point (0,0).

(6,-3)