

Polar Coordinates Practice

Name: _____

Date: _____

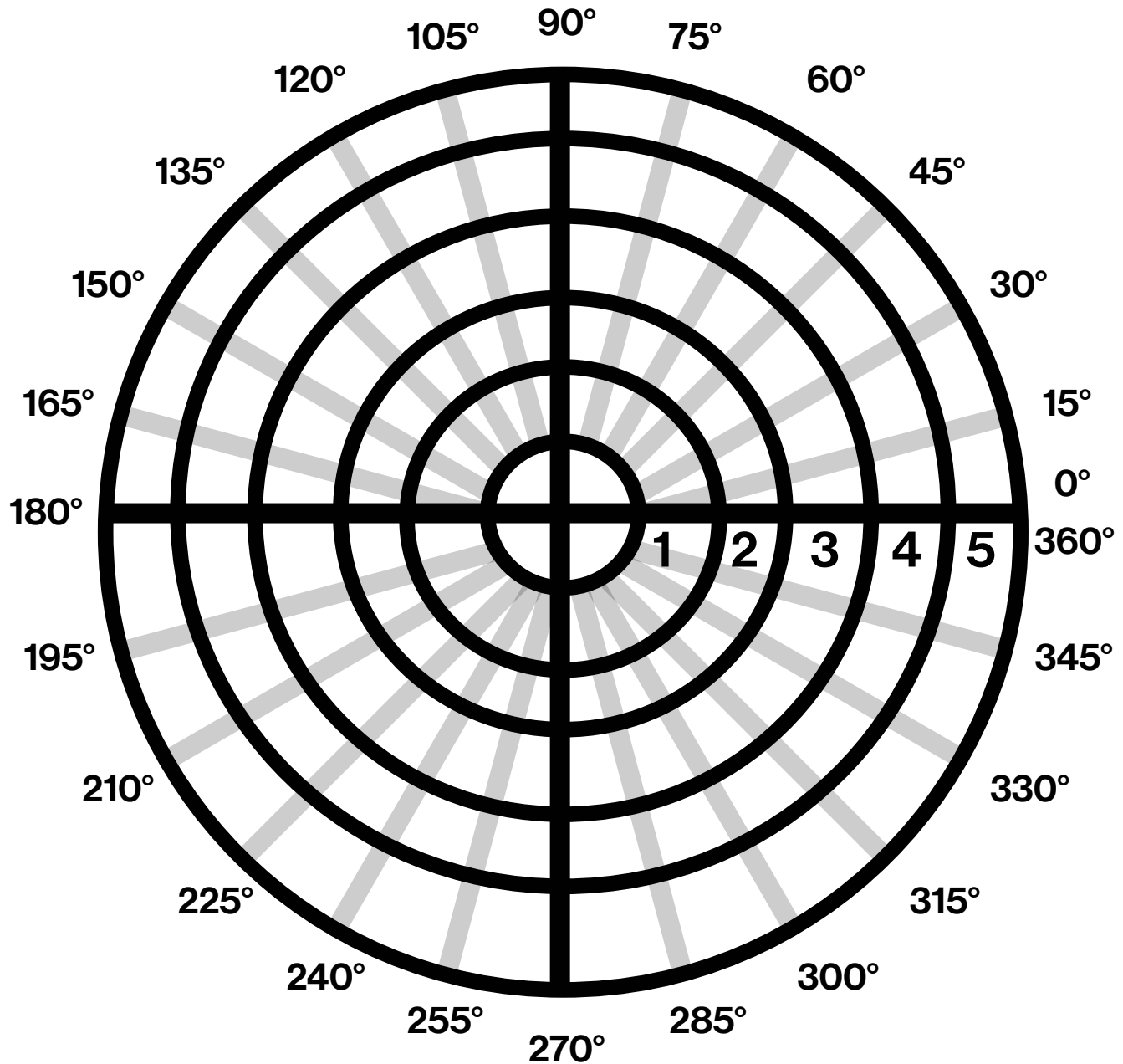
Question 1

Graph

I. $(-3, 135^\circ)$

II. $(0, 15^\circ)$

III. $(3, 405^\circ)$



Polar Coordinates Practice

Question 2

Convert

l. $(3, -3\sqrt{3})$

Question 3

Convert

l. $(2, 210^\circ)$

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Question 4

Convert

I. $y^2 - 5x - 25 = 0$

II. $y = 4$

III. $x^2 = 25y$

Question 5

Convert

I. $r = \frac{2}{1 - \sin \theta}$

II. $r \sin \theta = 2$

III. $r + 5 \sin \theta = 7 \cos \theta$

IV. $\theta = \frac{3\pi}{4}$

V. $r + r \cos \theta = 3$

Polar Coordinates Practice

Name: _____ **Key** _____

Date: _____

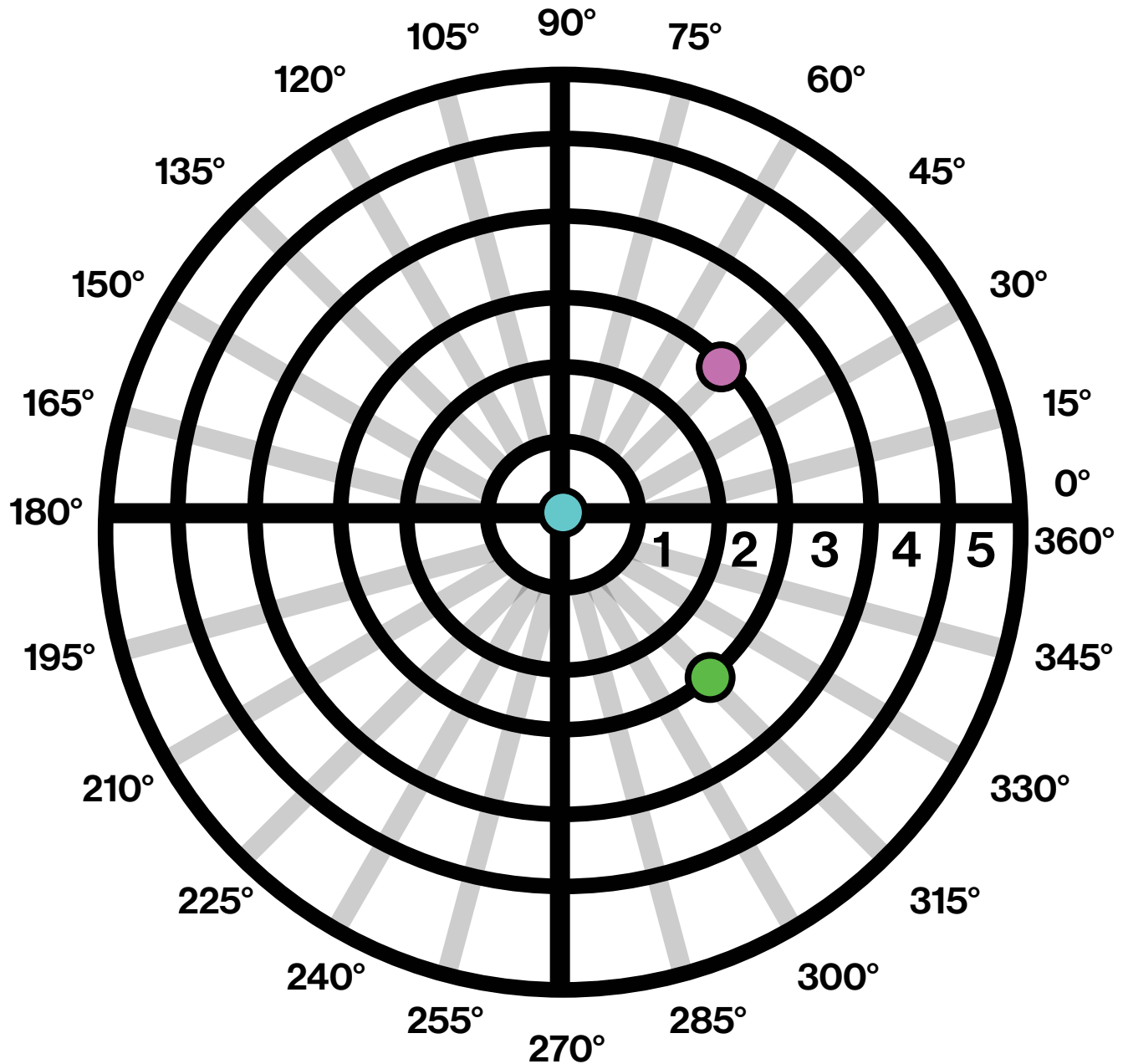
Question 1

Graph

I. $(-3, 135^\circ) \rightarrow (3, 315^\circ)$

II. $(0, 15^\circ)$

III. $(3, 405^\circ) \rightarrow (3, 45^\circ)$



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Question 2

Convert

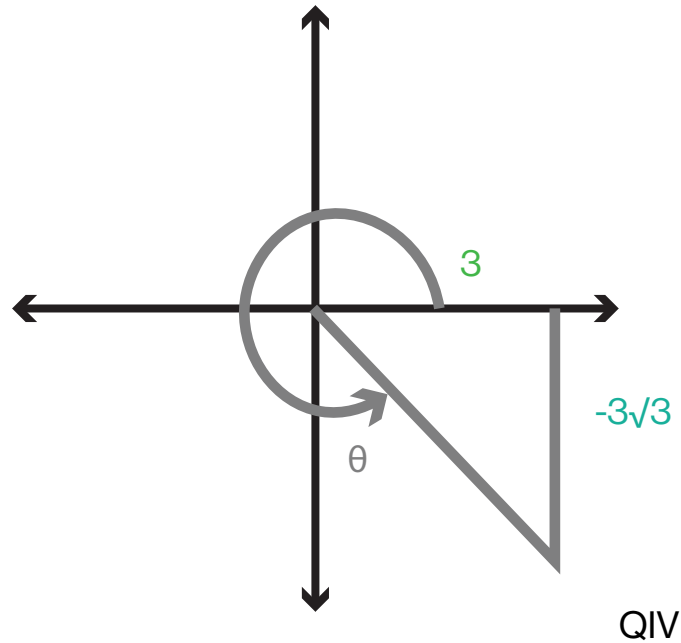
I. $(3, -3\sqrt{3})$

$$\sqrt{(3)^2 + (-3\sqrt{3})^2} = 6$$

$$\cos^{-1}(3/6) = 60^\circ$$

QIV

$$360^\circ - 60^\circ = 300^\circ$$



$$(3, -3\sqrt{3}) \rightarrow (6, 300^\circ)$$

Question 3

Convert

I. $(2, 210^\circ)$

$$\cos(210^\circ) \cdot 2 = -\sqrt{3}$$

$$\sin(210^\circ) \cdot 2 = -1$$

$$(2, 210^\circ) \rightarrow (-\sqrt{3}, -1)$$

Polar Coordinates Practice

Question 4

Convert

$$\text{I. } y^2 - 5x - 25 = 0 \rightarrow (r \cdot \sin \theta)^2 - 5r \cdot \cos \theta - 25 = 0 \rightarrow r^2 \cdot \sin^2 \theta - 5r \cdot \cos \theta - 25 = 0$$

$$\text{II. } y = 4 \rightarrow r \cdot \sin \theta = 4$$

$$\text{III. } x^2 = 25y \rightarrow (r \cdot \cos \theta)^2 = 25r \cdot \sin \theta \rightarrow r^2 \cdot \cos^2 \theta = 25r \cdot \sin \theta$$

Question 5

Convert

$$\text{I. } r = \frac{2}{1 - \sin \theta} \rightarrow r - r \sin \theta = 2 \rightarrow r - y = 2 \rightarrow r = 2 + y \rightarrow (r)^2 = (2 + y)^2$$

square both sides



$$x^2 = 4 + 4y \leftarrow x^2 + y^2 = 4 + 4y + y^2 \leftarrow r^2 = 4 + 4y + y^2$$

$$\text{II. } r \sin \theta = 2 \rightarrow y = 2$$

$$\text{III. } r + 5 \sin \theta = 7 \cos \theta \rightarrow r(r + 5 \sin \theta) = r(7 \cos \theta) \rightarrow r^2 + 5r \sin \theta = 7r \cos \theta \rightarrow x^2 + y^2 + 5y = 7x$$

multiply both sides by r



$$x^2 + y^2 + 5y - 7x = 0$$

$$\text{IV. } \theta = \frac{3\pi}{4} \rightarrow \tan\left(\frac{3\pi}{4}\right) = \frac{y}{x} \rightarrow -1 = \frac{y}{x} \rightarrow -x = y$$

$$\text{V. } r + r \cos \theta = 3 \rightarrow \sqrt{(x)^2 + (y)^2} + x = 3 \rightarrow \sqrt{(x)^2 + (y)^2} = 3 - x \rightarrow x^2 + y^2 = (3 - x)^2 \rightarrow x^2 + y^2 = 9 - 6x + x^2$$

square both sides



$$y^2 = 9 - 6x$$