

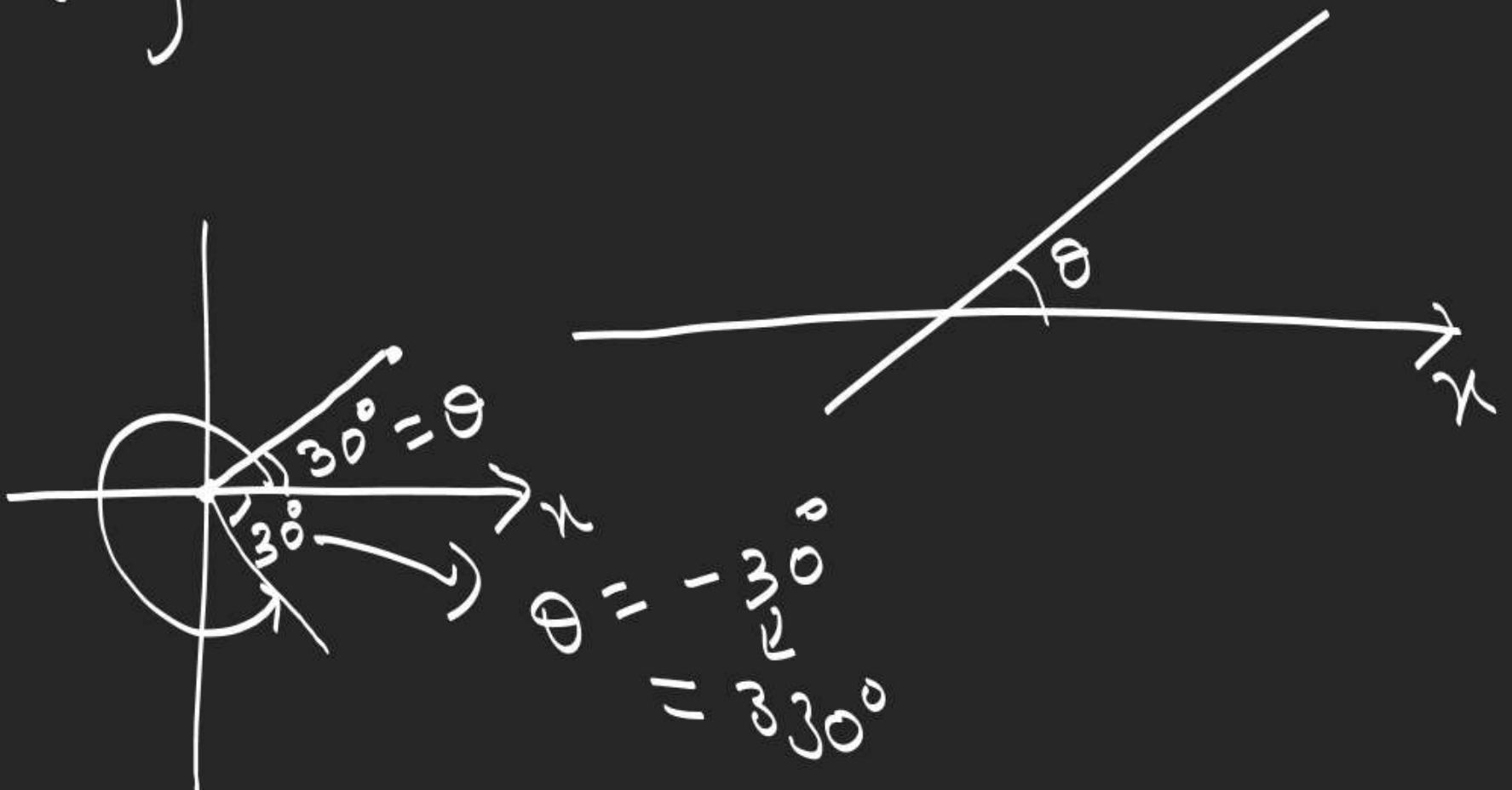
$$\begin{aligned}
 5. \quad \sin^8 \theta - \cos^8 \theta &= (\underbrace{\sin^4 \theta - \cos^4 \theta}_{(\sin^2 \theta - \cos^2 \theta)})(\underbrace{\sin^4 \theta + \cos^4 \theta}_{(\sin^2 \theta + \cos^2 \theta)^2 - 2 \sin^2 \theta \cos^2 \theta}) \\
 &= (\sin^2 \theta - \cos^2 \theta) ((\sin^2 \theta + \cos^2 \theta)^2 - 2 \sin^2 \theta \cos^2 \theta) \\
 &= (\sin^2 \theta - \cos^2 \theta) (1 - 2 \sin^2 \theta \cos^2 \theta).
 \end{aligned}$$

$$\begin{aligned}
 4. \quad \sin^6 A + \cos^6 A &= (\sin^2 A + \cos^2 A)^3 - 3 \sin^2 A \cos^2 A (\sin^2 A + \cos^2 A) \\
 &= 1 - 3 \sin^2 A \cos^2 A = \frac{\sin A + (1 + \cos A)}{\sin A (1 + \cos A)}
 \end{aligned}$$

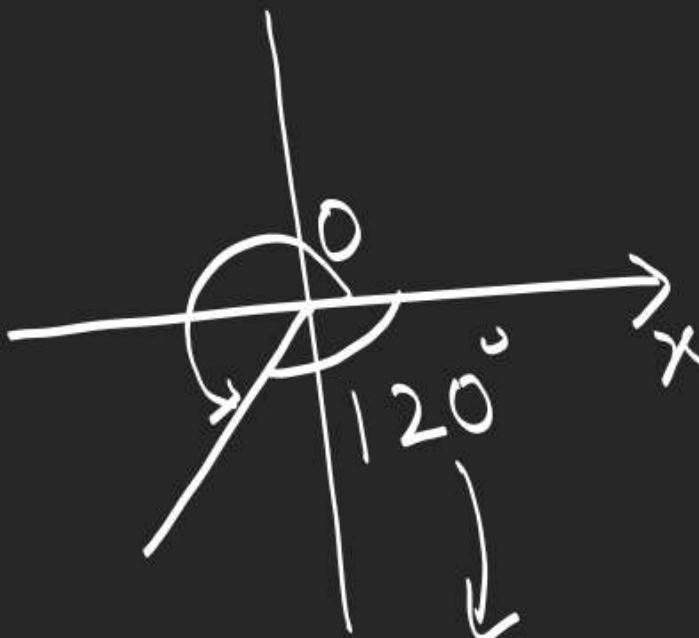
$$2 \cos \sec A = \frac{2 (1 + \cos A)}{\sin A (1 + \cos A)} = \frac{\cancel{\sin^2 A + \cos^2 A} + 1 + 2 \cos A}{\sin A (1 + \cos A)}$$

Measurement of Angle

Degrees



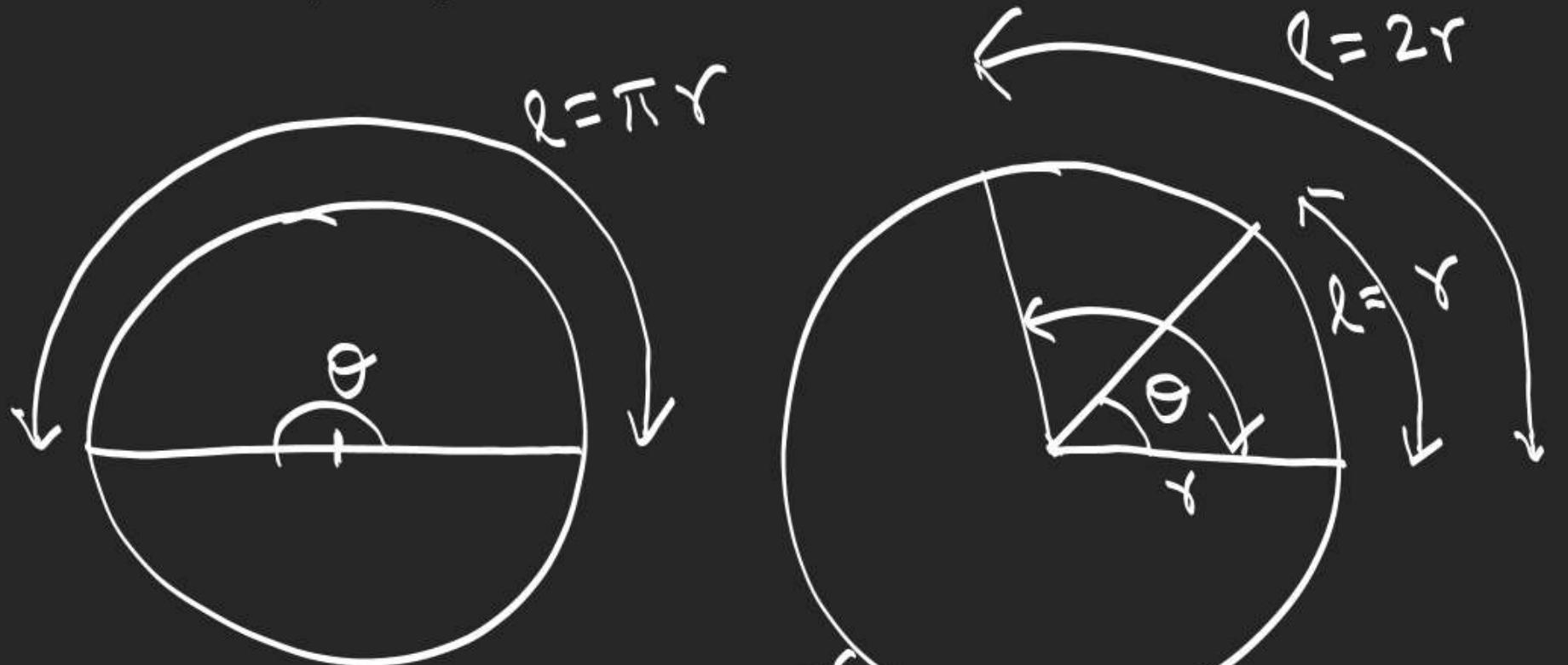
Radian



$$\theta = -120^\circ = 240^\circ$$

Radian

1 radian or 1° or 1 is



$$l = \pi r, \theta = \pi^\circ$$

$\pi^\circ = 180^\circ$

$$\theta = 1^\circ$$

$$\theta = 2^\circ$$

$$\theta = 3^\circ$$

$$\theta = k^\circ$$

$$\text{if } l = r$$

$$\text{if } l = 2r$$

$$\text{if } l = 3r$$

$$\text{if } l = kr$$

1^c

$$\pi^c = 180^\circ$$

$$1^c = \left(\frac{180}{\pi}\right)^\circ \approx (57. . . .)^\circ$$

$$36^\circ = \frac{\pi}{5}$$

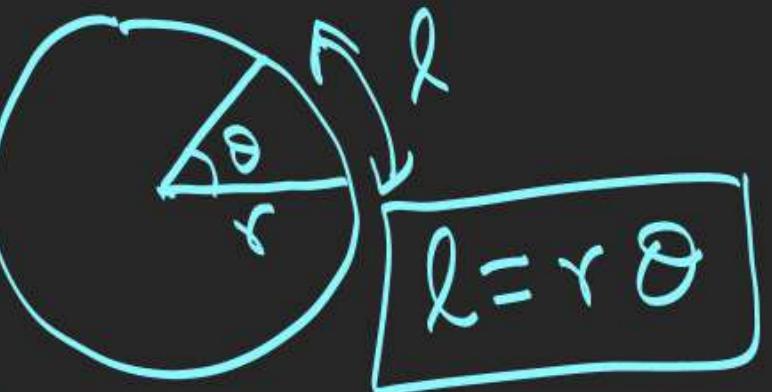
~~$$\frac{5}{12} = \left(\frac{5 \times 180}{12}\right)^\circ = 75^\circ$$~~

$$\pi^c = 180^\circ$$

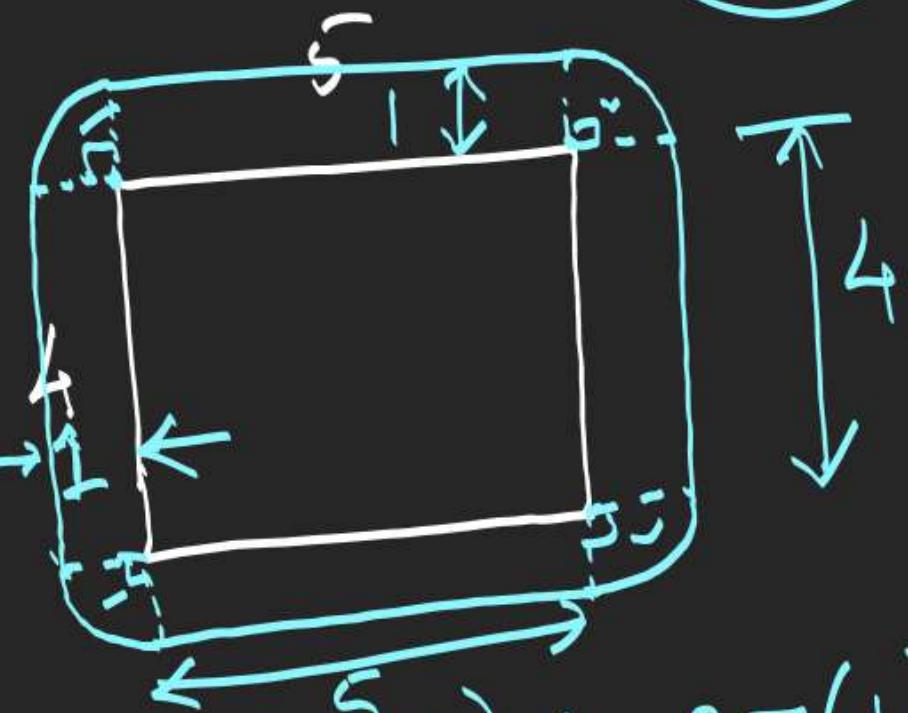
$$1^\circ = \left(\frac{\pi}{180}\right)^c$$

$$36^\circ = \left(\frac{\pi}{180} \times 36\right)^c$$

$$120^\circ = \frac{\pi}{180} \times 120 = \frac{2\pi}{3}$$



Distance covered by
moving outside the rectangle
always at a distance of
1 unit from its sides
by doing 1 revolution



$$2(4+5) + 2\pi(1)$$

$$2\pi + 18$$

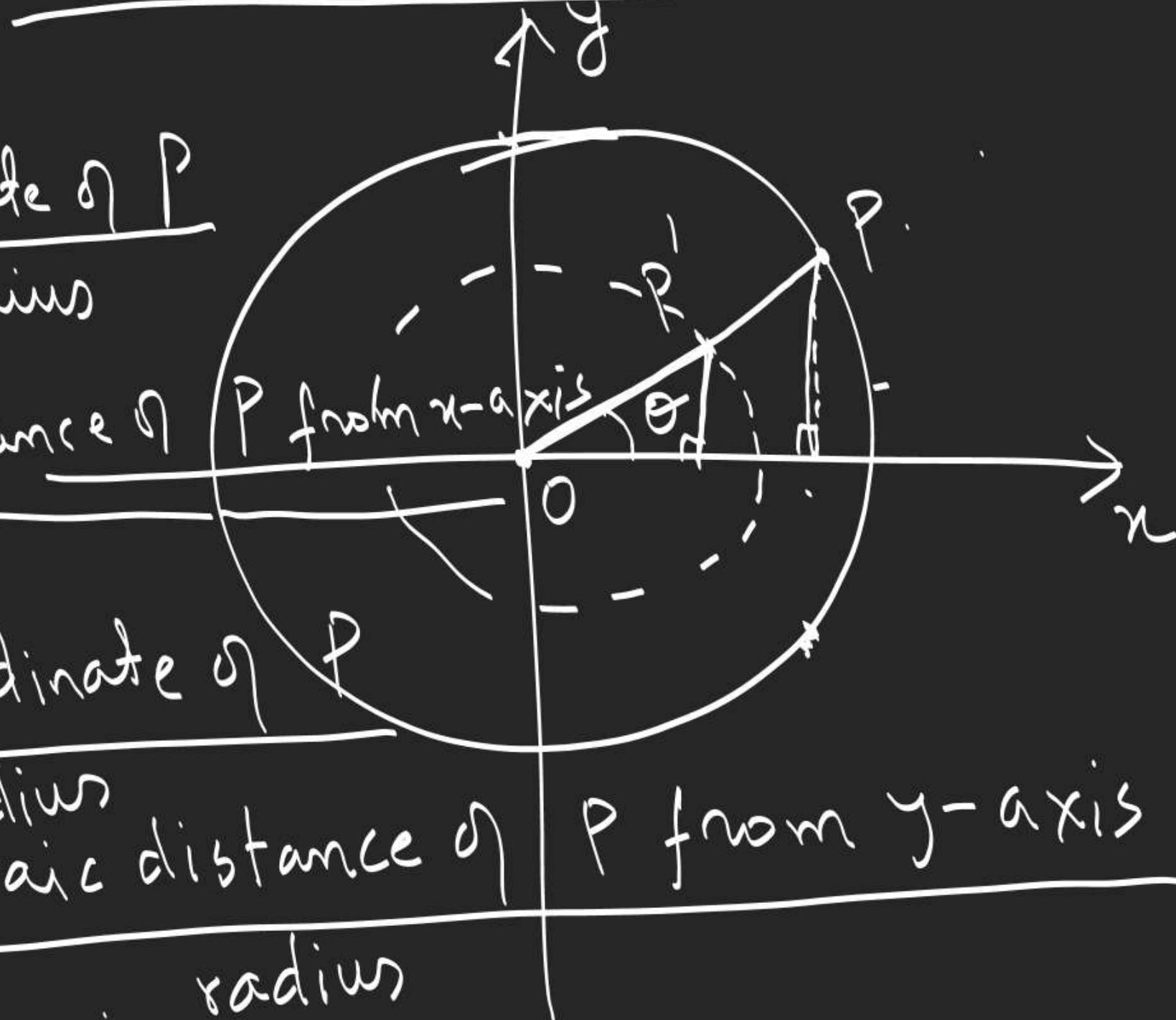
Definition of Sinθ & Cosθ

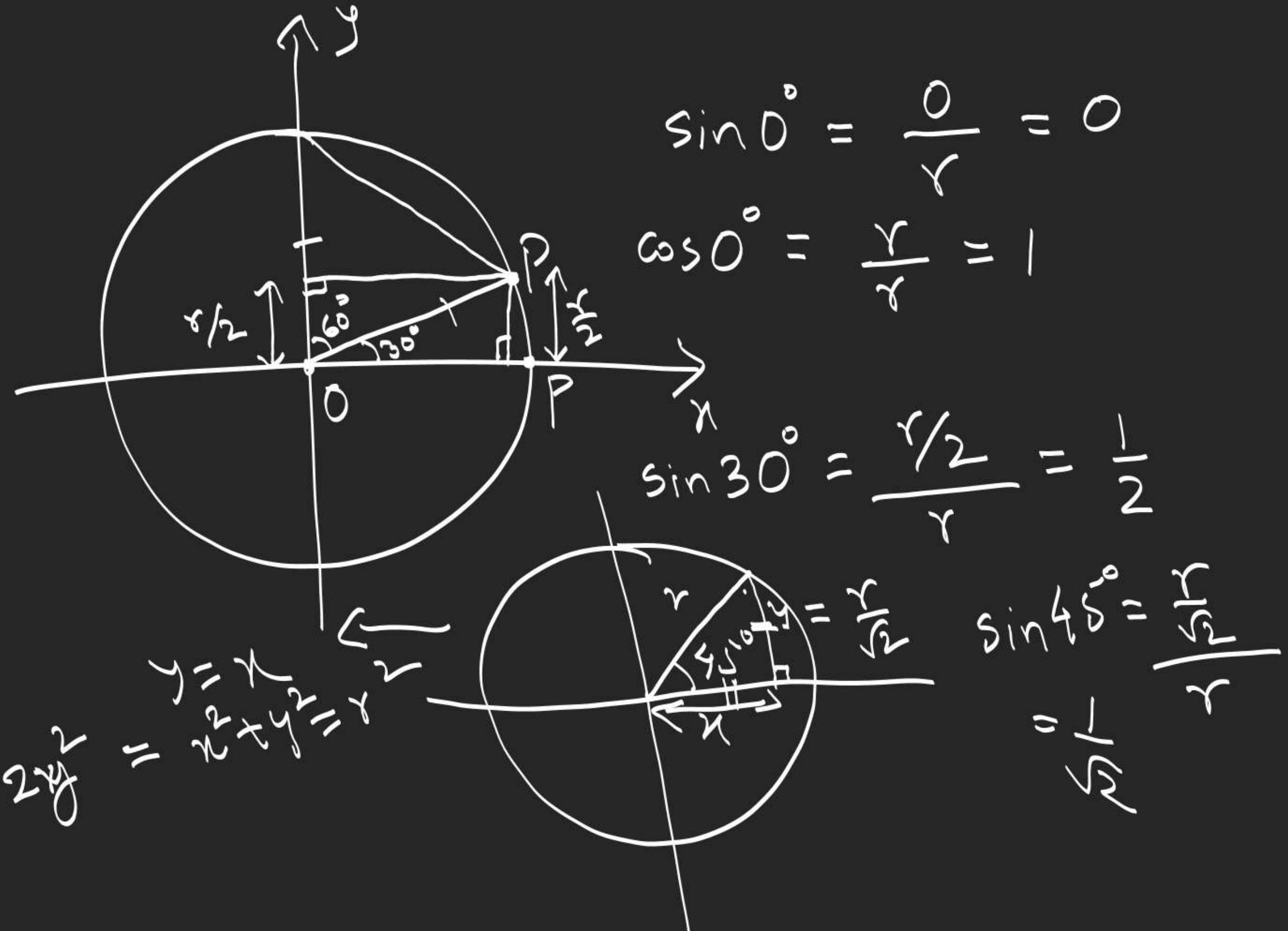
$$\sin\theta = \frac{y \text{ coordinate of } P}{\text{radius}}$$

$$= \frac{\text{algebraic distance of } P \text{ from } x\text{-axis}}{\text{radius}}$$

$$\cos\theta = \frac{x \text{-coordinate of } P}{\text{radius}}$$

$$= \frac{\text{algebraic distance of } P \text{ from } y\text{-axis}}{\text{radius}}$$





θ increases from 0° to 90°

$$\sin 0^\circ = \frac{y}{r} = 0, \quad \sin 90^\circ = \frac{y}{r} = 1$$

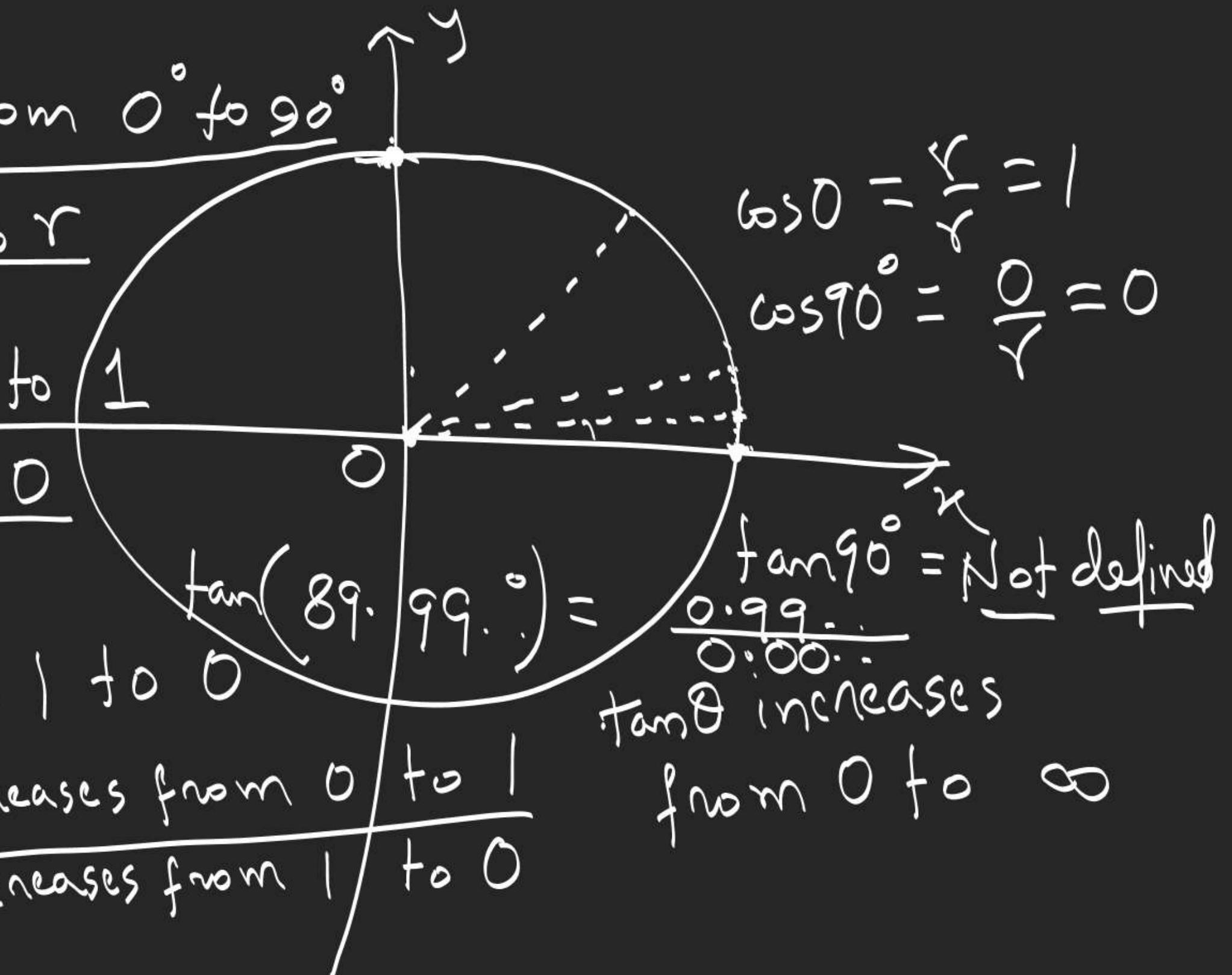
$\sin \theta = \frac{\text{increases from } 0 \text{ to } r}{r}$

$\sin \theta$ increases from 0 to 1

$$\cos \theta = \frac{\text{decreases from } r \text{ to } 0}{r}$$

$\cos \theta$ decreases from 1 to 0

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\text{increases from } 0 \text{ to } 1}{\text{decreases from } 1 \text{ to } 0}$$



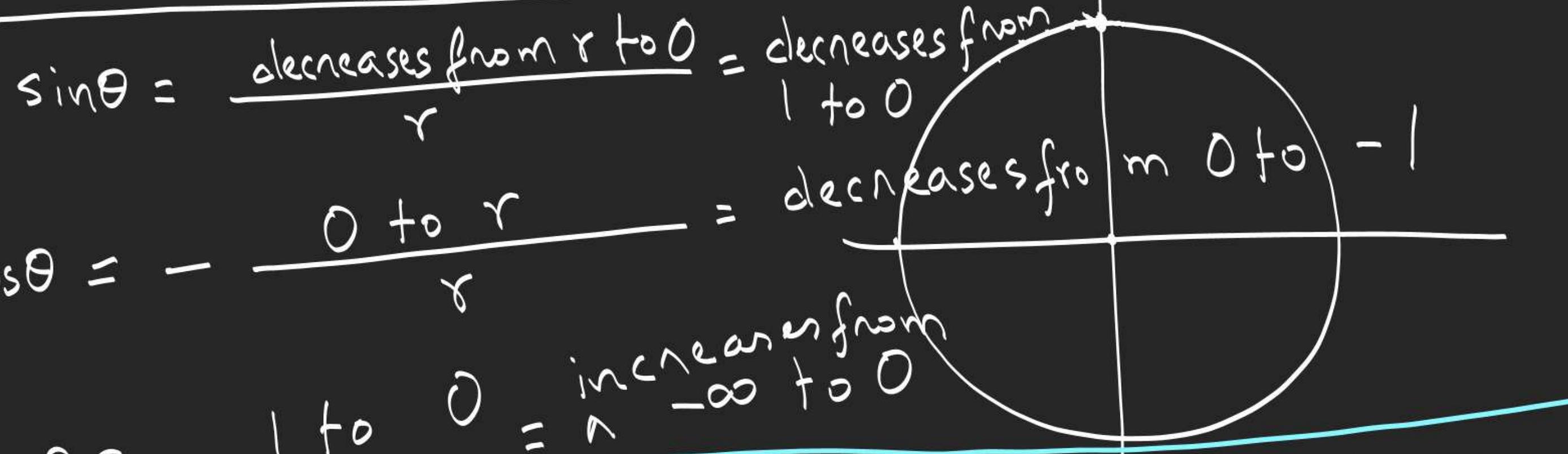
θ increases from 0° to 90°

$\sin \theta$ increases from 0 to 1

$\cos \theta$ decreases from 1 to 0

$\tan \theta$ increases from 0 to ∞

θ increases from 90° to 180°



$$\tan \theta = \frac{1 \text{ to } 0}{0 \text{ to } -1} = \text{increases from } -\infty \text{ to } 0$$

$\tan 90^\circ$ is undefined.

$\sin \theta$ decreases from 1 to 0

$\cos \theta$ decreases from 0 to -1

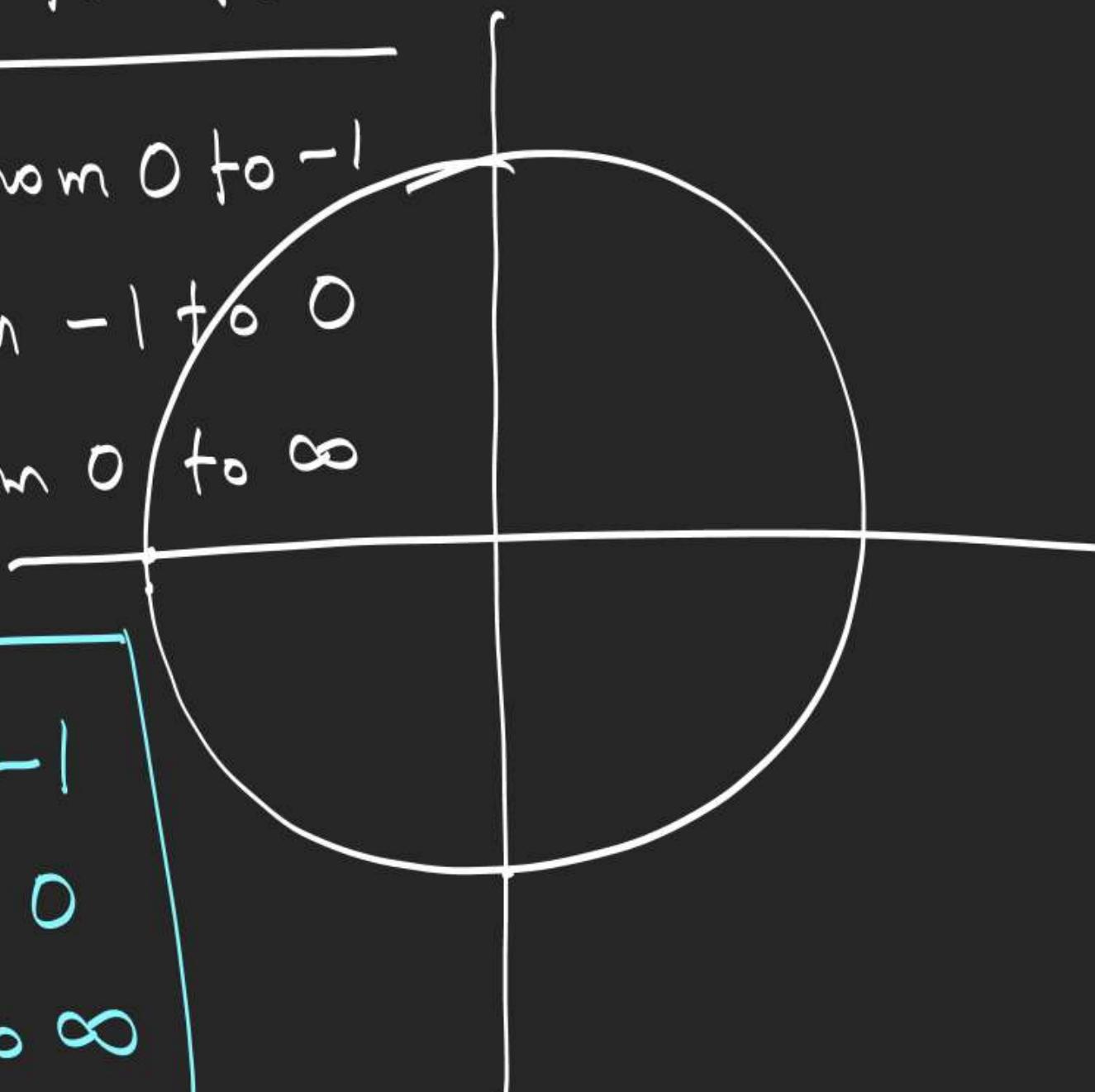
$\tan \theta$ increases from $-\infty$ to 0

θ increases from 180° to 270°

$$\sin\theta = -\frac{y \text{ to } r}{r} = \text{decreases from } 0 \text{ to } -1$$

$$\cos\theta = -\frac{x \text{ to } 0}{r} = \text{increases from } -1 \text{ to } 0$$

$$\tan\theta = \frac{y \text{ to } 1}{1 \text{ to } 0} = \text{increases from } 0 \text{ to } \infty$$



$\sin\theta$ decreases from 0 to -1

$\cos\theta$ increases from -1 to 0

$\tan\theta$ increases from 0 to ∞

θ increases from 270° to 360°

$\sin \theta$ increases from -1 to 0

$\cos \theta$ increases from 0 to 1

$\tan \theta$ increases from $-\infty$ to 0

$$\begin{aligned} 360^\circ &= 360^\circ + 1^\circ \\ 329^\circ &\approx 9^\circ \end{aligned}$$

$\cos \theta$ - 0 to 1
 $\sin \theta$ - r to 0

