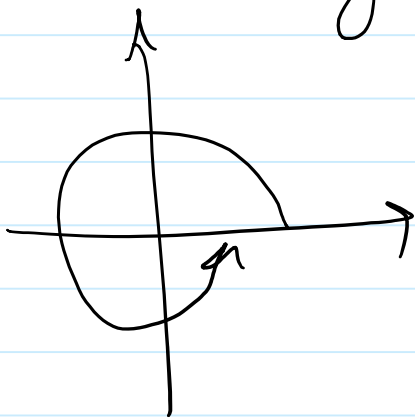


1

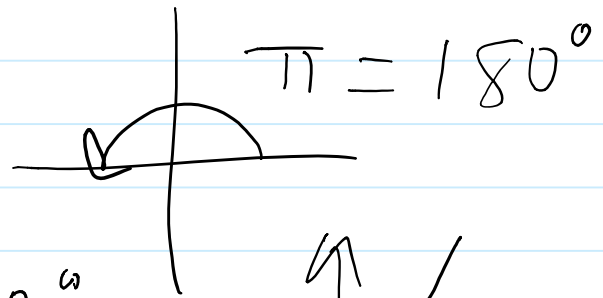
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- Welcome to Calc 1000!
 - Syllabus
-

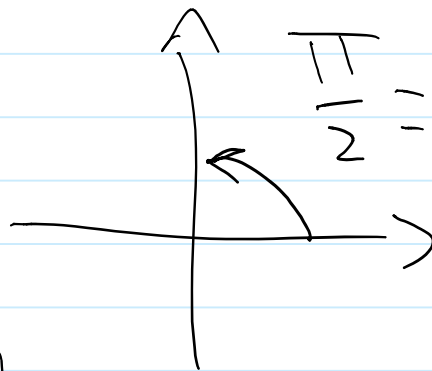
Angles are measured
in deg or radians.



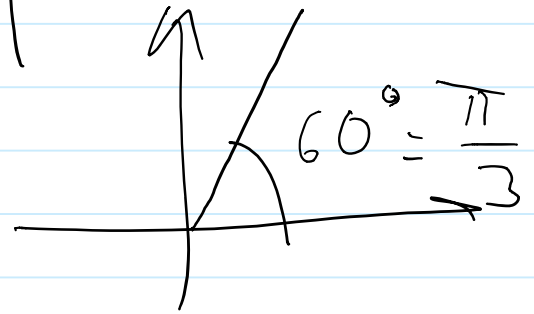
$$360^\circ = 2\pi \text{ rad.}$$



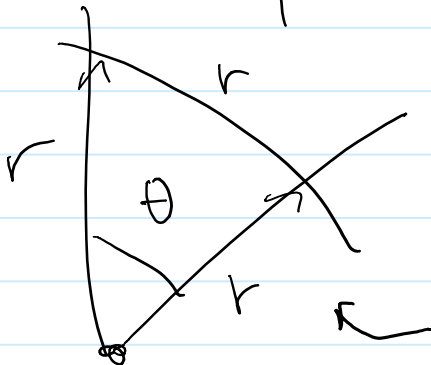
$$\pi = 180^\circ$$



$$\frac{\pi}{2} = 90^\circ$$

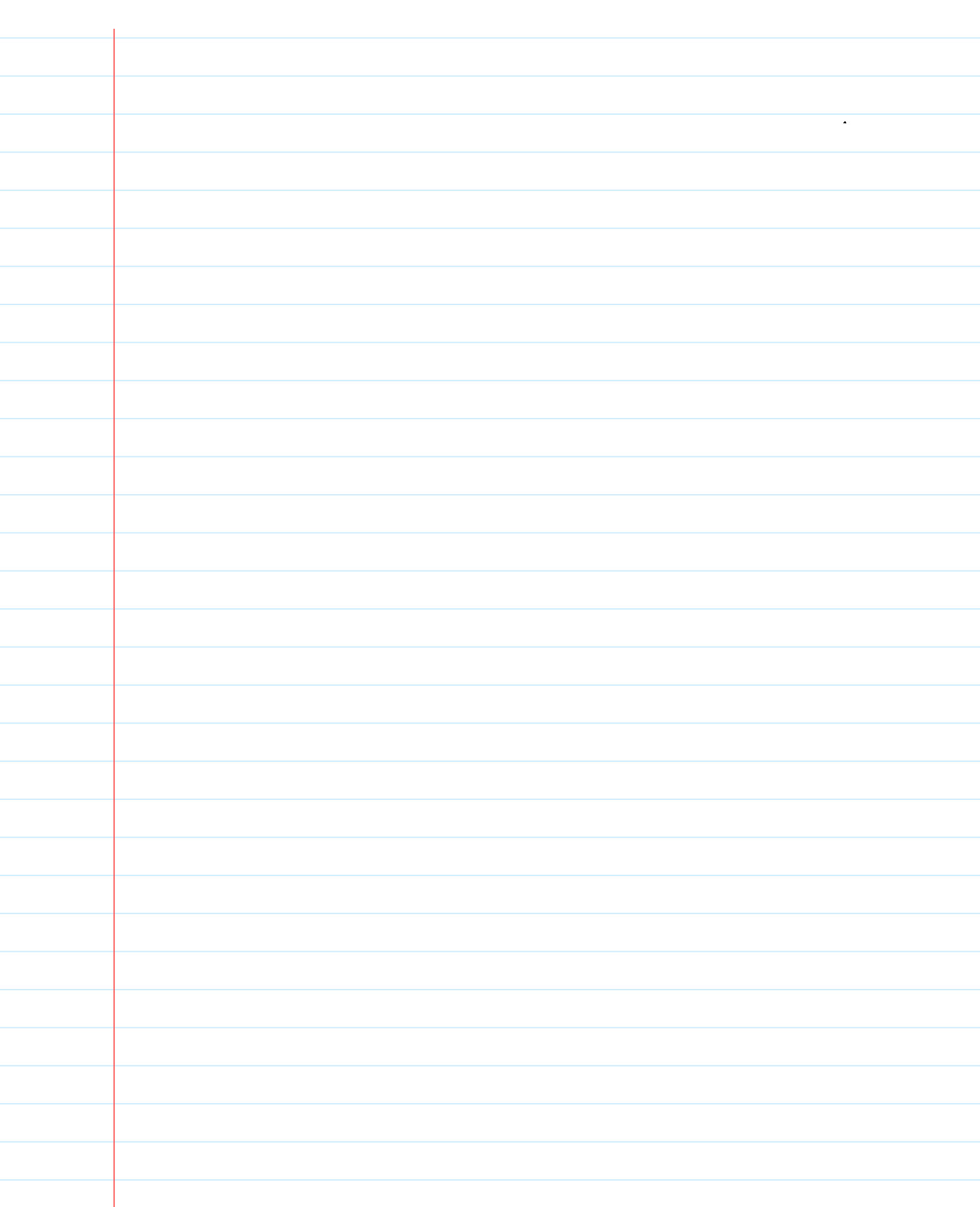


$$60^\circ = \frac{\pi}{3}$$



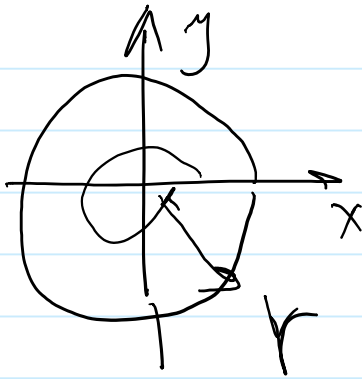
$$\theta = 1 \text{ rad} \approx 57.3^\circ$$

definition of one
radian



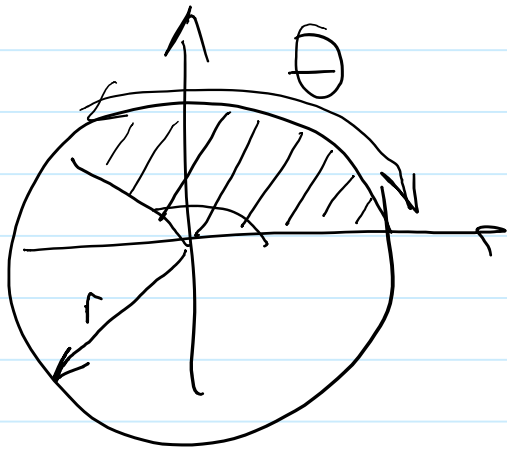
2

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$$\text{Circumference} = 2\pi r$$

$$\text{Area} = \pi r^2$$

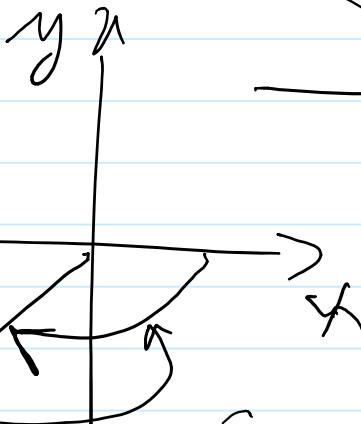
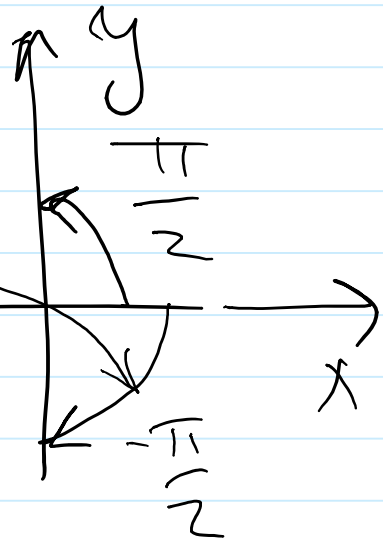


Circumference of
the sector of angle θ
 $= \theta r$

$\theta = \text{in rad.}$

$$\text{Area (Sector } \theta) = \frac{\theta}{2\pi} \pi r^2$$

$$\text{Area} = \frac{\theta}{2} r^2$$



$$\theta = -\frac{\pi}{2}$$

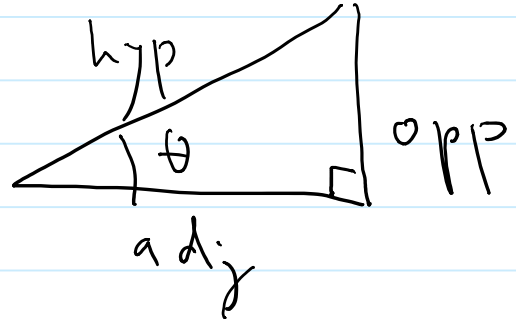
$$\theta = -\frac{3\pi}{4}$$

3

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Trig functions

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$



$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$0 < \theta < \frac{\pi}{2}$$

$$\tan \theta = \frac{\sin \theta}{\cos \theta} = \frac{\text{opp}}{\text{adj}}$$

$$\cot \theta = \frac{\cos \theta}{\sin \theta} = \frac{\text{adj}}{\text{opp}}$$

$$\sec \theta = \frac{1}{\cos \theta} = \frac{\text{hyp}}{\text{adj}}$$

$$\csc \theta = \frac{1}{\sin \theta} = \frac{\text{hyp}}{\text{opp}}$$

$$\tan \frac{\pi}{2} = \infty \quad (\text{in the limit})$$

Trig identities

$$\bullet \boxed{\sin^2 \theta + \cos^2 \theta = 1}$$

divide this by $\cos^2 \theta$:

$$\frac{\sin^2 \theta}{\cos^2 \theta} + \frac{\cos^2 \theta}{\cos^2 \theta} = \frac{1}{\cos^2 \theta}$$

$$\boxed{\tan^2 \theta + 1 = \sec^2 \theta}$$

$$\boxed{1 + \cot^2 \theta = \csc^2 \theta}$$

$$\bullet \sin(-\theta) = -\sin \theta$$

(sine is an odd function)

$$\bullet \cos(-\theta) = \cos \theta$$

(cosine is an even function)

$$\bullet \tan(-\theta) = \frac{\sin(-\theta)}{\cos(-\theta)} = \frac{-\sin \theta}{\cos \theta} = -\frac{\sin \theta}{\cos \theta} = -\tan \theta$$

↑
odd.

Similar for other trig functions.