

Trigonometry

Where's stuff? What're the marchin' orders? What will IT do to me, today, to waste my time?

$$2\pi \text{ radians} = 360^\circ$$

what's the circumference of circle of radius $r=1$?

$$C = 2\pi r = 2\pi \cdot 1 = 2\pi$$

how many radians? 2π

RADIANS RELATE ANGLES TO ARC LENGTH!

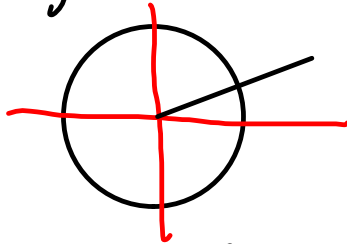
How far do you go if you go halfway around? ($r=1$)

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

what's the angle, θ radians?

$$\text{Arc length} = s = r\theta$$

$$\theta = \pi!$$



$$r=3: \quad 2\pi \cdot 3$$

$$\frac{360^\circ}{1 \text{ rev}}$$

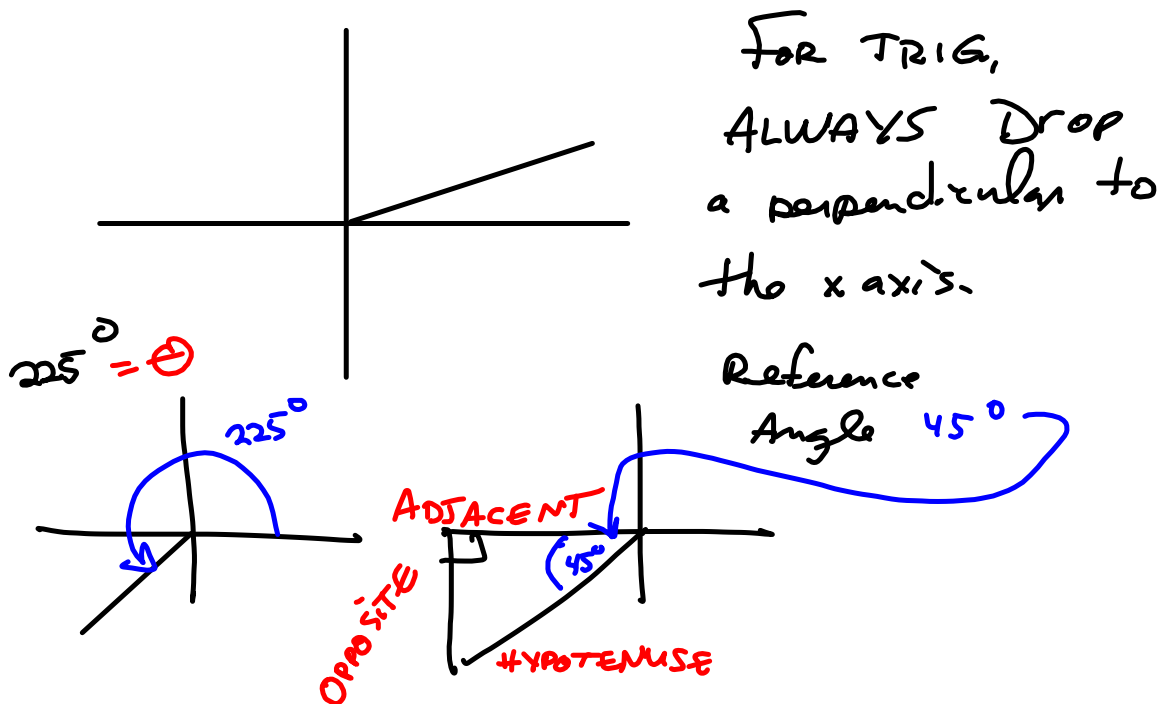
$$\frac{2\pi \text{ radians}}{1 \text{ rev}}$$

$$\left(\frac{2\pi \text{ radians}}{360^\circ} \right) = \left| \frac{1 \text{ rev}}{1 \text{ rev}} \right| = 1$$

$$\frac{2\pi}{360^\circ} = \frac{\pi}{180^\circ} = \text{conversion from radians to degrees}$$

$$230^\circ = \left(230^\circ \right) \left(\frac{\pi}{180^\circ} \right) = \frac{23\pi}{18} \text{ radians}$$

Think in degrees. Convert to radians as required (often at the end of a problem!)



$$\sin \theta = \frac{\text{OPP}}{\text{HYP}}$$

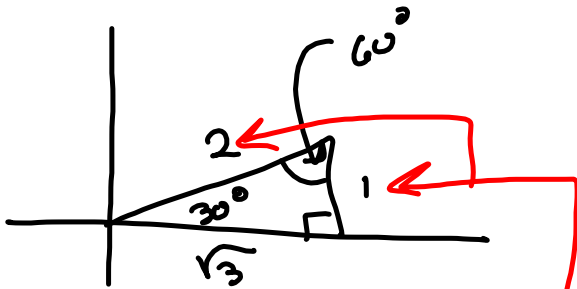
$$\cos \theta = \frac{\text{ADJ}}{\text{HYP}}$$

$$\tan \theta = \frac{\text{OPP}}{\text{ADJ}}$$

SOH CAH TOA

All $45^\circ-45^\circ$ right triangles
are similar.

Do Not Memorize the 12-point unit circle like the stupid book wants. Learn the 1st quadrant and figure the rest of it out.



$$\sin(30^\circ) = .5$$

$$\cos(30^\circ) = \frac{\text{ADJ}}{\text{HYP}} = .8660254038$$

$$\cos\left(30 \cdot \frac{\pi}{180}\right) = \cos\left(\frac{\pi}{6}\right)$$

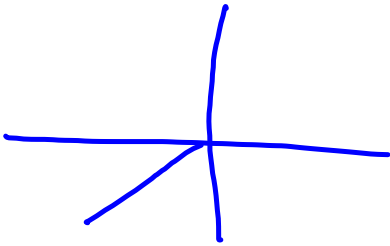
$$\sin 30^\circ = \sin \frac{\pi}{6} = \frac{1}{2}$$

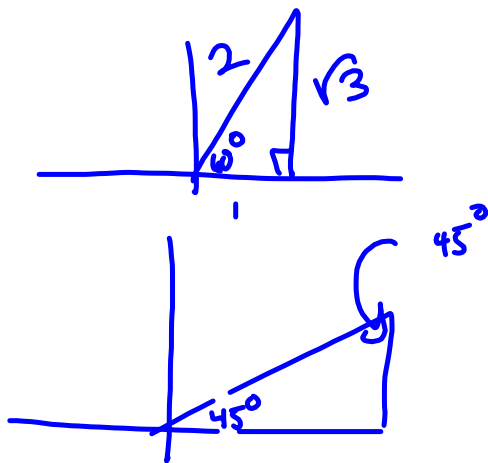
$$\cos 30^\circ = \cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$$

$$\tan 30^\circ = \tan \frac{\pi}{6} = \frac{1}{\sqrt{3}}$$

\approx APPROXIMATELY

$$\frac{\sqrt{3}}{2} \approx$$

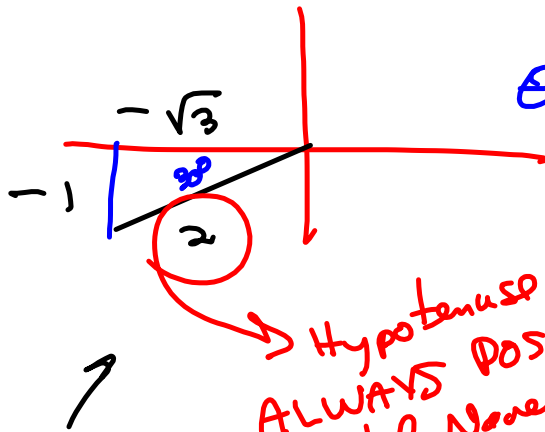
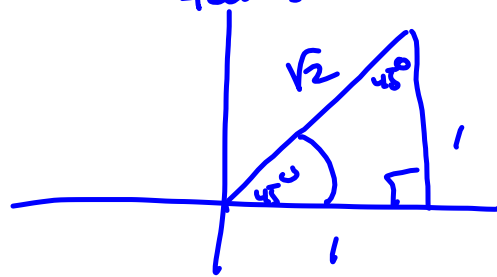




$$\sin 45^\circ = \frac{1}{\sqrt{2}}$$

$$\cos 45^\circ = \frac{1}{\sqrt{2}}$$

$$\tan 45^\circ = 1$$



$$\theta = 210^\circ$$

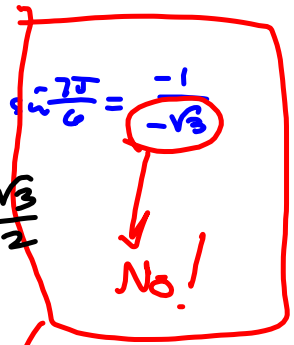
Hypotenuse
ALWAYS POSITIVE
until November.

$$\sin 210^\circ = \frac{-\sqrt{3}}{2} = -\frac{\sqrt{3}}{2}$$

$$\cos 210^\circ = -\frac{1}{2}$$

$$\tan 210^\circ = \frac{1}{\sqrt{3}}$$

$$\frac{1}{2}$$



what's the area of a circle of radius $r=1$?