Week 10 Friday

March 15, 2019 7:55 AM

Quiz Tues 6.6

Recap 7.2 Pythagorean Identities

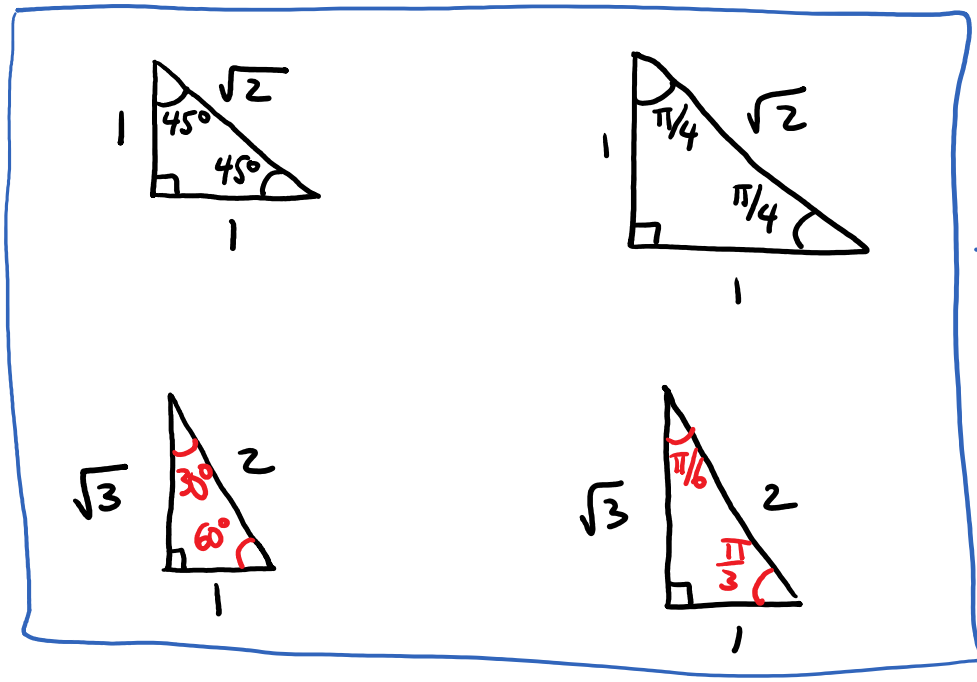
$$\sin^2\theta + \cos^2\theta = 1$$

$\div(\sin^2\theta)$ $\qquad$ $\div(\cos^2\theta)$

$1 + \cot^2\theta = \csc^2\theta$ $\qquad$ $\tan^2\theta + 1 = \sec^2\theta$

7.3 Special Values of Trig Functions

Degrees	30°	45°	60°
Radians	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$



Know these ★

$\sqrt{3} \approx 1.7$

Recall SoHCAHToA

Recall $\sec\theta = \frac{1}{\cos\theta}$ $\csc\theta = \frac{1}{\sin\theta}$ $\cot\theta = \frac{1}{\tan\theta}$

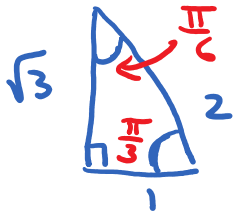
Ex: Find

$\sin 45° = \frac{O}{H} = \frac{1}{\sqrt{2}}$ or $\frac{\sqrt{2}}{2}$

$\sec\frac{\pi}{4} = \frac{H}{A} = \frac{\sqrt{2}}{1} = \sqrt{2}$

$\tan\frac{\pi}{4} = \frac{O}{A} = \frac{1}{1} = 1$

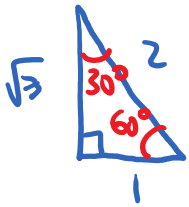
$\cos 30° = \frac{A}{H} = \frac{\sqrt{3}}{2}$



$\sec\frac{\pi}{6} = \frac{H}{A} = \frac{2}{\sqrt{3}}$ or $\frac{2\sqrt{3}}{3}$

$\cot\frac{\pi}{6} = \frac{A}{O} = \frac{\sqrt{3}}{1} = \sqrt{3}$

$\sin 60° = \frac{O}{H} = \frac{\sqrt{3}}{2}$



$\cos\frac{\pi}{3} = \frac{A}{H} = \frac{1}{2}$

$\cot\frac{\pi}{3} = \frac{A}{O} = \frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3}$

Ex: Round to 2 decimal places

a) $\tan\frac{\pi}{8}$ Radian Mode

Press DRG to get "RAD"

$= \tan\left(\frac{\pi}{8}\right)$

≈ 0.41

b) $\sec 32^\circ$ Degree Mode

$= \frac{1}{\cos 32^\circ}$

≈ 1.18

c) $\cos^2 \frac{\pi}{16}$ Radian Mode

$= \left(\cos \frac{\pi}{16}\right)^2$

$= \left(\cos\left(\frac{\pi}{16}\right)\right)^2$

≈ 0.96

Ex:

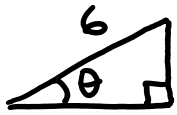
Find h

$\tan 39^\circ = \frac{h}{100}$

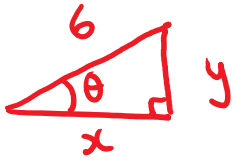
$100 \tan 39^\circ = h$

$h \approx 81\text{ m}$

Ex:



Find area of the triangle



$\cos\theta = \frac{x}{6}$

$x = 6\cos\theta$

$\sin\theta = \frac{y}{6}$

$y = 6\sin\theta$

$$A = \frac{1}{2}bh$$

$$= \frac{1}{2} x\, y$$

$$= \frac{1}{2}(6\cos\theta)(6\sin\theta)$$

$$= 18\cos\theta\sin\theta$$