Precalculus
Section 4.2a
The Unit Circle
Objective: Evaluate trig functions using the unit circle

Sep 12-5:01 PM

55, 51, 45

$\frac{\sin\theta}{\sin\cos\theta} + \frac{\cos\theta}{\sin\theta}\frac{\cos\theta}{\cos\theta} = \csc\theta\sec\theta$

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

$\frac{1}{\sin\theta\cos\theta}$

$\frac{1}{\sin\theta} \cdot \frac{1}{\cos\theta}$

$\csc\theta\sec\theta = \csc\theta\sec\theta$ ✓

Aug 26-10:35 AM

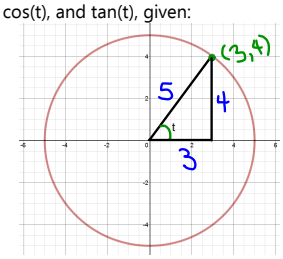
WARM UP

Determine the exact values of sin(t), cos(t), and tan(t), given:

$\sin(t) = \frac{4}{5}$

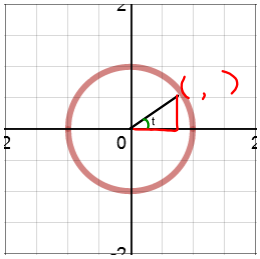
$\cos(t) = \frac{3}{5}$

$\tan(t) = \frac{4}{3}$



Sep 12-5:04 PM

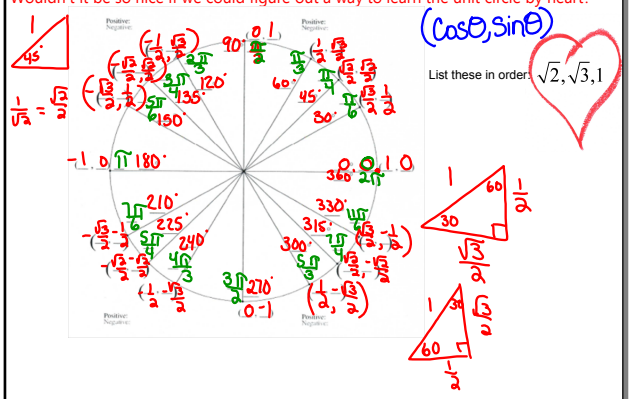
Let's apply the same logic to the UNIT circle (radius=__1__)...



p. 274: #1 (HW)

Sep 12-5:13 PM

Wouldn't it be so nice if we could figure out a way to learn the unit circle by heart?



Sep 12-5:23 PM

Can we go the other way around?

Example
Find the point (x,y) on the unit circle that corresponds to the real number $t = \frac{\pi}{6}$

$\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

Check using unit circle on reference page!

Sep 12-5:18 PM

Evaluate

a) $\sin\frac{\pi}{2} = 1$ **b)** $\cos\frac{3\pi}{2} = 0$ **c)** $\cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}$

d) $\sin\frac{11\pi}{6} = -\frac{1}{2}$ **e)** $\sin\frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$ **f)** $\cos\frac{2\pi}{3} = -\frac{1}{2}$

What do you NOTICE and what do you WONDER about the points on the unit circle?

Sep 12-5:22 PM

Evaluate all 6 trigonometric functions for:

a) $\frac{5\pi}{4}$ **b)** $-\frac{\pi}{6}$

$\sin\frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$

$\cos\frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$

$\tan\frac{5\pi}{4} = \frac{\sin}{\cos}$

$\frac{-\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = 1$

$\csc\frac{5\pi}{4} = -\frac{2}{\sqrt{2}}\cdot\frac{\sqrt{2}}{\sqrt{2}} = \frac{-2\sqrt{2}}{2} = -\sqrt{2}$

$\sec\frac{5\pi}{4} = -\sqrt{2}$

$\cot\frac{5\pi}{4} = 1$

Sep 12-5:41 PM

HOMEWORK

..."Draw the unit circle, and you have nothing left to discover about trigonometry."

4.2a (p. 274): 1-35 ODD

Sep 12-5:37 PM