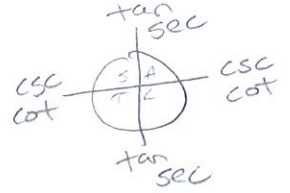


PreCalculus
Practice Quiz

NAME Key

Solve over $[0, 2\pi)$.



1. $2 \sin x \sec x = \sqrt{3} \sec x$

$2 \sin x \sec x - \sqrt{3} \sec x = 0$

$\sec x (2 \sin x - \sqrt{3}) = 0$

$\sec x = 0$

~~$\cos x = \frac{1}{0}$~~

$2 \sin x - \sqrt{3} = 0$

$2 \sin x = \sqrt{3}$

$\sin x = \frac{\sqrt{3}}{2}$

$x = \frac{\pi}{3}, \frac{2\pi}{3}$

2. $\sin^2 x + 2 \cos x = 2$

↓
replace

$1 - \cos^2 x + 2 \cos x - 2 = 0$

$-\cos^2 x + 2 \cos x - 1 = 0$

$\cos^2 x - 2 \cos x + 1 = 0$

$(\cos x - 1)(\cos x - 1) = 0$

$\cos x - 1 = 0$

$\cos x = 1$

$x = 0$

3. $\sin x (\csc x - 2) = 0$

$\sin x = 0$ $\csc x - 2 = 0$

$\csc x = 2$

$\sin x = \frac{1}{2}$

~~$x = 0, \pi$~~

$x = \frac{\pi}{6}, \frac{5\pi}{6}$

4. $3 \csc^2 2x = 4$

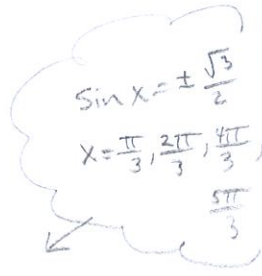
$\csc^2 2x = \frac{4}{3}$

$\sin^2 2x = \frac{3}{4}$

$\sin 2x = \pm \frac{\sqrt{3}}{2}$

① $2x = \frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$

② $2x = \frac{2\pi}{3}, \frac{8\pi}{3}, \frac{10\pi}{3}, \frac{11\pi}{3}$



+2π (or 6π/3)

*Multiply all by 1/2

$x = \frac{\pi}{6}, \frac{2\pi}{6}, \frac{4\pi}{6}, \frac{5\pi}{6}, \frac{2\pi}{6}, \frac{8\pi}{6}, \frac{10\pi}{6}, \frac{11\pi}{6}$
 $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$

Subtract

5. $\tan x = \sec x$

$\tan x - \sec x = 0$

$\frac{\sin x}{\cos x} - \frac{1}{\cos x} = 0$

$\cos x \left(\frac{\sin x - 1}{\cos x} = 0 \right) \cos x$

$\sin x - 1 = 0$

$\sin x = 1$

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

undefined so no solutions

OR look at your unit circle, Tangent never equals secant.