Warm - Up

Simplify the following expressions:

$$\frac{1}{\sin^2 x} + \frac{\sec^2 x}{\tan^2 x}$$

$$\sin x \cdot \cos x \cdot \tan x \cdot \sec x \cdot \csc x$$

SWBAT solve equations using identities

Agenda:

- Warm - Up
- HW Q's
- Solve equations using Identities
- Exit Card

HW - Page 452 #51 - 61 odd

(add to the other 452 HW, both checked Wed/Thurs)

?????????? HW Q's ??????????

(10)

$$\frac{\sin^2 x + \tan^2 x + \cos^2 x}{\sec x}$$

$$\frac{1 + \tan^2 x}{\sec x}$$

$$\frac{\sec^2 x}{\sec x} = \sec x$$

(24) $\dfrac{1+\tan x}{1+\cot x}$

$1+\dfrac{\tan x}{\cot x}$

$1+\dfrac{\frac{\sin x}{\cos x}}{\frac{\cos x}{\sin x}} \cdot \dfrac{\sin x}{\cos x}$

$1+\dfrac{\sin^2 x}{\cos^2 x}$

$1+\tan^2 x =$

(30) $\dfrac{(\sec x - \tan x)(\sec x + \tan x)}{\sec x}$

$\dfrac{\sec^2 x - \tan^2 x}{\sec x}$

$\dfrac{\dfrac{1}{\cos^2 x} - \dfrac{\sin^2 x}{\cos^2 x}}{\sec x} \rightarrow \dfrac{\dfrac{1 - \sin^2 x}{\cos^2 x}}{\sec x}$

$\dfrac{\dfrac{\cos^2 x}{\cos^2 x}}{\sec x} = \dfrac{1}{\sec x} = \cos x$

(32) $\dfrac{\sec^2 x \csc x}{\sec^2 x + \csc^2 x}$

$\dfrac{\sec^2 x \csc x}{\frac{1}{\cos^2 x} + \frac{1}{\sin^2 x}}$ $\sin x$

$\dfrac{\sec^2 x \csc x}{\frac{\sin^2 x + \cos^2 x}{\cos^2 x \sin^2 x}} = \dfrac{\sec^2 x \csc x}{\frac{1}{\cos^2 x \sin^2 x}}$

$\frac{1}{\cos^2 x} \cdot \frac{1}{\sin x} \cdot \left(\frac{\cos^2 x + \sin^2 x}{1}\right)$ $= \dfrac{\frac{1}{\cos^2 x}\frac{1}{\sin x}}{\frac{1}{\cos^2 x \sin^2 x}}$

Find all values of x in the interval $[0, 2\pi)$ that solve:

$$\frac{\cos^3 x}{\sin x} = \cot x$$

$$\frac{\cos^3 x}{\sin x} = \frac{\cos x}{\sin x}$$

$$\cos^3 x = \cos x$$

$$-\cos x \quad -\cos x$$

$$\cos^3 x - \cos x = 0$$

$$\cos x(\cos^2 x - 1) = 0$$

$$\cos x(-\sin^2 x) = 0$$

$\cos x = 0$ $\quad -\sin^2 x = 0$

$\sin x = 0$

$\frac{\pi}{2}, \frac{3\pi}{2}$ $\quad$ ~~$0, \pi$~~

Find all values of x in the interval $[0, 2\pi)$ that solve:

$\tan x \sin^2 x = \tan x$

$\frac{\sin x}{\cos x} \cdot \sin^2 x = \frac{\sin x}{\cos x}$

$\frac{\sin^3 x}{\cos x} = \frac{\sin x}{\cos x}$

$\sin^3 x = \sin x$

$-\sin x \quad -\sin x$

$\sin^3 x - \sin x = 0$

$\sin x(\sin^2 x - 1) = 0$

$\sin x(-\cos^2 x) = 0$

$\sin x = 0$

$0, \pi$

$-\cos^2 x = 0$

$\cos x = 0$

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

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

$-1 \quad -1$

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

$-\cos^2 x \quad -\cos^2 x$

$\sin^2 x - 1 = -\cos^2 x$

Find all values of x in the interval $[0, 2\pi)$ that solve:

$2\sin^2 x = 1$

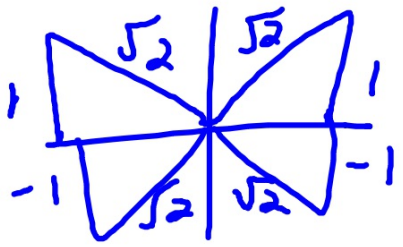
$2\sin^2 x - 1 = 0$

$+1 \quad +1$

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

$\sqrt{\sin^2 x} = \pm\sqrt{\frac{1}{2}}$

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



$\frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$

Exit Card:

Find all values of x in the interval $[0, 2\pi)$ that solve:

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