5/15

51. $\cos^4 x - \sin^4 x = 1 - 2\sin^2 x$

$(\cos^2 x + \sin^2 x)(\cos^2 x - \sin^2 x)$

$1(\cos^2 x - \sin^2 x)$

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

$1 - 2\sin^2 x \quad \checkmark = 1 - 2\sin^2 x$

May 15-9:09 AM

!!. $\csc\theta - \sin\theta = \cot\theta\cos\theta$

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

$\frac{1 - \sin^2\theta}{\sin\theta}$

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

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

$\cot\theta\cos\theta \quad \checkmark = \cot\theta\cos\theta$

May 15-9:19 AM

Solving Trig Eqs Notes

1). $3\sin x - 2 = 5\sin x - 1$

like $3x - 2 = 5x - 1$

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

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

Solving over $0 \le \theta < 2\pi$

$\frac{\pi}{6}$ fam

π

$\frac{7\pi}{6}$ $\frac{11\pi}{6}$

May 15-9:22 AM

b) $5\sin x = 3\sin x + \sqrt{3}$

like $5x = 3x + \sqrt{3}$

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

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

$2x = \sqrt{3}$

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

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

$2\pi/3$ $\pi/3$

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

May 15-9:25 AM

#2 $\pm\sqrt{\quad}$

$(\quad)^2 \pm$ constant $= 0$

no "linear" term

no plain x term.

$4\sin^2 x + 5 = 6$

like $4x^2 + 5 = 6$

$4x^2 = 1$

$\sin x^2 = \frac{1}{4}$

$\sin x = \pm\sqrt{\frac{1}{4}}$ $\quad \sin x = \pm\frac{1}{2}$

$\frac{\pi}{6}$ fam.

$\frac{5\pi}{6}$ $\frac{\pi}{6}$ $\frac{7\pi}{6}$ $\frac{11\pi}{6}$

$\frac{4\pi}{6}$ $\frac{12\pi}{6}$

May 15-9:29 AM

b. $3\sec^2 x - 4 = 0$

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

$\sec x = \pm\sqrt{\frac{4}{3}}$

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

reciprocal of cos x

$\frac{1}{\cos x} = \pm\frac{2}{\sqrt{3}}$

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

$3x^2 - 4 = 0$

$3x^2 = 4$

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

$x = \pm\sqrt{\frac{4}{3}}$

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

$\frac{5\pi}{6}$ $\frac{\pi}{6}$ $\frac{7\pi}{6}$ $\frac{11\pi}{6}$

$\frac{\pi}{6}$ fam

May 15-9:33 AM

(3) $\tan(3x) = 1$

Let $K = 3x$

$\therefore \tan K = 1$

$K = \frac{\pi}{4}$ $K = \frac{5\pi}{4}$

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

$x = \pi/12$ $x = 5\pi/12$

$3x = \frac{\pi}{4}$, $x = \frac{\pi}{12}$; $3x = \frac{5\pi}{4}$, $x = \frac{5\pi}{12}$

$\tan = \frac{y}{x}$

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

May 15-9:37 AM

$\sec(4x) = 2$

let $K = 4x$

$\therefore \sec K = 2$ } replace sec x with $\frac{1}{\cos x}$

$\frac{1}{\cos K} = \frac{2}{1}$

$\cos K = \frac{1}{2}$

$K = \frac{\pi}{3}$ $K = \frac{5\pi}{3}$

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

$4x = \frac{\pi}{3}$ $4x = \frac{5\pi}{3}$

$x = \frac{\pi}{12}$ $x = \frac{5\pi}{12}$

May 15-9:42 AM

e). $\sin\frac{x}{2} = \frac{\sqrt{3}}{2}$

let $K = \frac{x}{2}$

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

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

$K = \frac{\pi}{3}$ $K = \frac{2\pi}{3}$

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

$x = 2\pi/3$ $x = 4\pi/3$

May 15-9:45 AM

S4. g) $2\cos^2 x + \cos x - 1 = 0$

que ($2x^2 + x - 1 = 0$

let $u = \cos x$: $2u^2 + u - 1 = 0$

$(2u - 1)(u + 1) = 0$

$2u - 1 = 0$ $u + 1 = 0$

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

$\cos x = \frac{1}{2}$ $\cos x = -1$

π (-1,0)

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

May 15-9:47 AM

$2\sin^2 x - 3\sin x + 1 = 0$

let $u = \sin x$

$2u^2 - 3u + 1 = 0$

$(2u - 1)(u - 1) = 0$

$2u - 1 = 0$ $u - 1 = 0$

$u = \frac{1}{2}$ $u = 1$

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

(0,1)

$\frac{5\pi}{6}$, $\frac{\pi}{2}$, $\pi/6$

May 15-9:51 AM

#5. GCF

1). $\tan x \sin^2 x = 3\tan x$

$\tan x \sin^2 x - 3\tan x = 0$

$\tan x(\sin^2 x - 3) = 0$

$\tan x = 0$ $\sin^2 x - 3 = 0$

$\sin^2 x = 3$

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

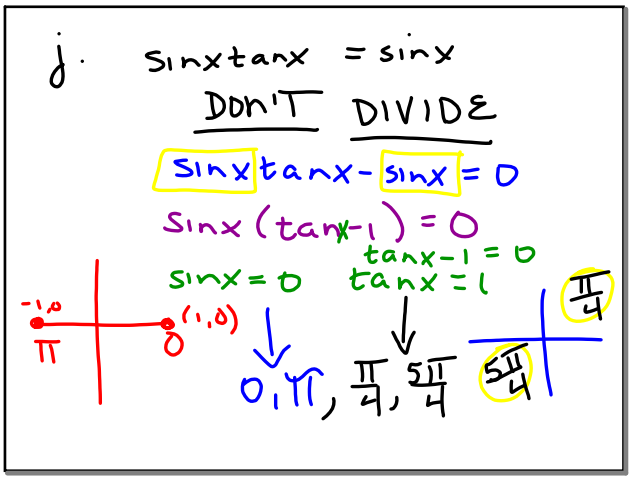
$\sin x = \pm 1.73$

$\tan x = 0$

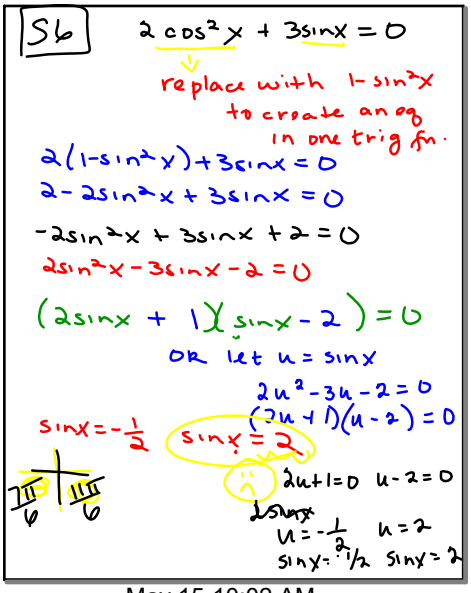
$\frac{y}{x} = 0$

(-1,0) (1,0) 0, π

May 15-9:54 AM



May 15-9:59 AM



May 15-10:02 AM