## HW 8-5 Key in 8-5 File

GHW#13 Due tomorrow.
Reschedule for today if you're not going to be here and get Friday's note sheet. Otherwise you will take the quiz Monday when you return.

After checking hw, try the warmups in our notes: 1, 2 & 3

Assignment sheet is a day off.
HW tonight: bookwork HW 8-6

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Ch 8 Day 6

Find the exact value in radians:

1. $\cos(\cos^{-1}(\frac{-1}{2}))$

2. $\csc^{-1}\sqrt{2}$

3. $\tan^{-1}\frac{-\sqrt{3}}{3}$

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**More than one trig function in a trig equation:**

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

$\tan^2x+1=\sec^2x$

$1+\cot^2x=\csc^2x$

1. **Look for identities to replace trig functions**
2. **Get the equation such that there is only one trig function when it's a quadratic**
3. **When it's not quadratic, still set = 0 and GCF factor**

Solve each between [0, 2π]

1. $\sin x \tan x = \sin x$

$\sin x\tan x-\sin x=0$

$\sin x(\tan x-1)=0$

| $\sin x=0$ | $\tan x=1$ |
|---|---|
| $x=0,\pi,2\pi$ | $\alpha=\pi/4$, $I=\pi/4$, $III=5\pi/4$ |

| $x=\pi-\alpha$ | $x=\alpha$ |
|---|---|
| $x=\pi+\alpha$ | $x=2\pi-\alpha$ |

$\{0,\pi,2\pi,\frac{5\pi}{4},\frac{\pi}{4}\}$

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

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

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

| $\tan x=0$ | $\sin^2x=1/2$ |
|---|---|
| $x=0,\pi,2\pi$ | $\sin x=\pm\frac{\sqrt{2}}{2}$, $\alpha=\pi/4$, all Quadrants |

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

$\{0,\pi,2\pi,\frac{\pi}{4},\frac{3\pi}{4},\frac{5\pi}{4},\frac{7\pi}{4}\}$

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3. $\sin^2\theta - 3\cos^2\theta = 0$

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

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

$1-\cos^2\theta - 3\cos^2\theta = 0$

$1 - 4\cos^2\theta = 0$

$-4\cos^2\theta = -1$

$\cos^2\theta = 1/4$

$\cos\theta = \pm 1/2$

$\alpha = \pi/3$

$\{\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}\}$

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4. $3\cos^2 x - 5\sin x = 4$

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

$3(1-\sin^2 x) - 5\sin x - 4 = 0$

$3 - 3\sin^2 x - 5\sin x - 4 = 0$

$-3\sin^2 x - 5\sin x - 1 = 0 \quad )x-1$

$3\sin^2 x + 5\sin x + 1 = 0$

$\sin x = \frac{-5 \pm \sqrt{25-4(3)(1)}}{2(3)} = \frac{-5\pm\sqrt{13}}{6}$

$\sin x = \frac{-5+\sqrt{13}}{6}$ | $\sin x = \frac{-5-\sqrt{13}}{6}$

$\{3.3761, 6.0486\}$

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5. $\sin 2x + \sin x + 2\cos x + 1 = 0$

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

$\sin 2x \neq \sin^2 x$

$\sin 2x = 2\sin x\cos x$

$\sin x(2\cos x + 1) + 1(2\cos x + 1) = 0$

$(2\cos x + 1)(\sin x + 1) = 0$

$\cos x = -1/2$ | $\sin x = -1$

$\alpha = \pi/3$

II: $2\pi/3$

III: $4\pi/3$

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

$\{2\pi/3, 4\pi/3, 3\pi/2\}$

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Feb 4-11:18 PM