TUES.
1-8-08

P. 34 II

① $\left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\right\}$ ③ $\left\{0, \pi, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$

⑤ $\left\{0, \pi, \frac{\pi}{6}, \frac{5\pi}{6}\right\}$ ⑦ $\left\{\frac{7\pi}{6}, \frac{11\pi}{6}, \pi\right\}$

⑨ $\left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}\right\}$ ⑪ $\left\{\frac{\pi}{6}, \frac{5\pi}{6}\right\}$

⑧ $\left\{\frac{\pi}{2}\right\}$

GENERAL SOLUTIONS

③ $\left\{x : x = k\pi \cup x = \frac{\pi}{3} + 2k\pi \cup x = \frac{5\pi}{3} + 2k\pi\right\}$ $k \in J$

⑨ $\left\{x : x = \frac{\pi}{6} + 2k\pi \cup x = \frac{5\pi}{6} + 2k\pi \cup x = \frac{3\pi}{2} + 2k\pi\right\}$ $k \in J$

2

$\sin 2x - \sin x = \sin x$?

AWFUL

ok: $2\sin x - \sin x = \sin x$

$\sin 2x - \sin x = \sin x(\sin x - 1)$?

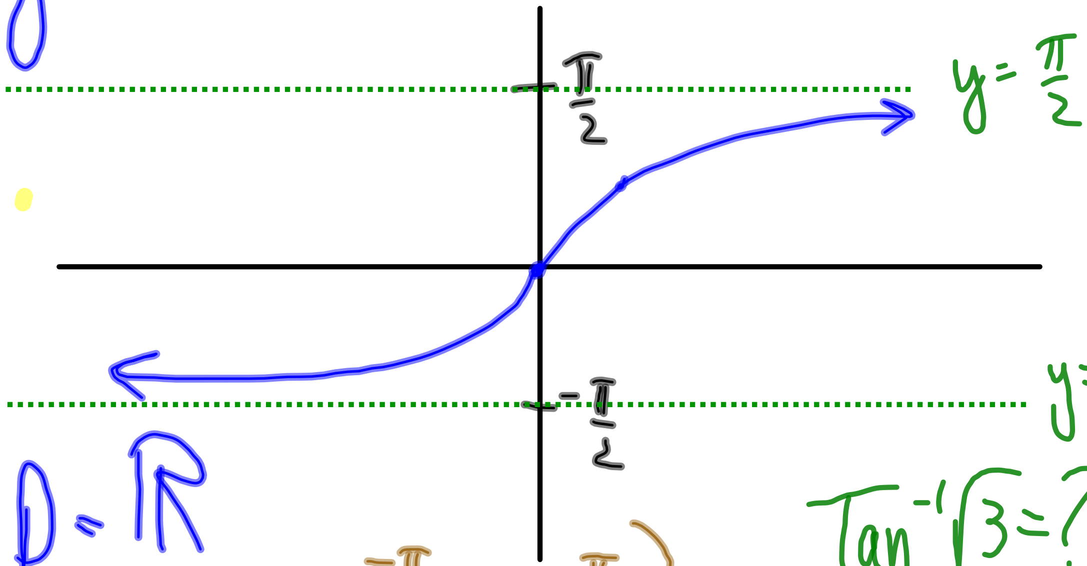
WORSE

ok: $\sin 2x - \sin x = 2\sin x\cos x - \sin x$

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

ok: $\sin^2 x - \sin x = \sin x(\sin x - 1)$

$y = \text{Tan}^{-1} x \equiv \text{Arctan}\, x$



- $D = \mathbb{R}$
- $R = \{y : y \in \mathbb{R},\ -\frac{\pi}{2} < y < \frac{\pi}{2}\}$

$\text{Tan}^{-1}\sqrt{3} = ?$

$\frac{\pi}{3}$

$\text{Arctan}(-\sqrt{3}) = ?$

$-\frac{\pi}{3}$

Ex) Solve: $\sqrt{x} = 4$

$x^2 = 16$

$x^2 - 16 = 0$

$(x-4)(x+4) = 0$

$x-4=0$ or $x+4=0$

$x = 4$ or $x = {}^{-}4$

$\{4, \cancel{-4}\}$

EXTRANEOUS ROOT

4

***LAST RESORT**

WHEN YOU SQUARE BOTH SIDES OF AN EQUATION, YOU MUST CHECK ALL SOLUTIONS IN THE ORIGINAL & DISCARD ONES THAT DON'T WORK IN THE ORIGINAL EQUATION.

Ex) SOLVE: $0 \le x < 2\pi$: $\cos x = 1 + \sqrt{3}\cdot\sin x$ 5

① ISOLATE THE $\sqrt{\ }$ TERM: $\cos x - 1 = \sqrt{3}\cdot\sin x$

② SQUARE BOTH SIDES: $(\cos x - 1)^2 = (\sqrt{3}\cdot\sin x)^2$

$$(\cos x - 1)(\cos x - 1) = \sqrt{3}\cdot\sin x\cdot\sqrt{3}\cdot\sin x$$

$$\cos^2 x - 2\cos x + 1 = 3\cdot\sin^2 x$$

$$\cos^2 x - 2\cos x + 1 = 3(1 - \cos^2 x)$$

$$\cos^2 x - 2\cos x + 1 = 3 - 3\cos^2 x$$

$$4\cos^2 x - 2\cos x - 2 = 0$$ NEXT PAGE...

$$4\cos^2 x - 2\cos x - 2 = 0$$

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

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

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

silly

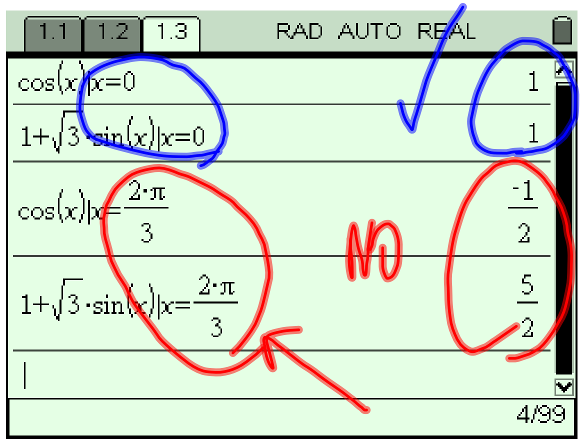
$2\cos x = -1$ $\quad$ $\cos x = 1$

$\cos x = -\frac{1}{2}$ $\quad$ $x = 0$

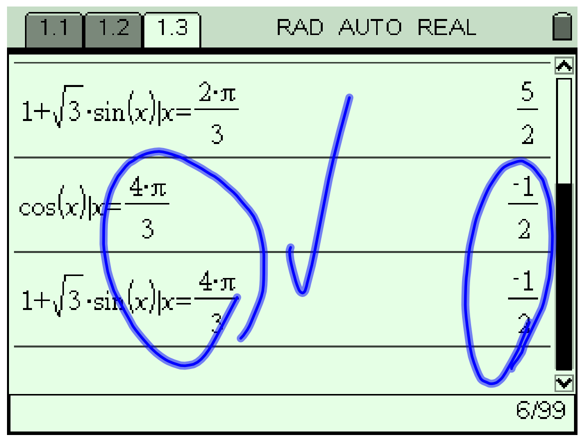
$x = \frac{2\pi}{3}, \frac{4\pi}{3}$

*CHECK IN ORIGINAL!

$$\left\{0, \frac{4\pi}{3}\right\}$$



DISCARD



P.35 CORRECTIONS:

3 f) ~~inot~~ → into

4) SOLVE TO THE NEAREST THOUSANDTH GRAPHICALLY BY ~~ZOOMING IN~~ <CALC> <INTERSECT>

4 c) FIND THE OTHER POINTS OF INTERSECTION. ~~WITHOUT~~...

O.T.L. · CORRECT TODAY'S O.T.L (TURN IN PERFECT!)

· P.34 II 13

· P.35 4, 8, 9 a, c, e, ...

(8) $3\csc x - \sin x = 2$

8

$$\sin x \left[\frac{3}{\sin x} - \sin x = 2 \right]$$

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

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

⋮

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

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

$\vdots$

(9) $\cos 2x = \sin x$

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

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

$\vdots$

(11) $\tan x = \frac{1}{2}\sec x$

$2\cos x \left[\frac{\sin x}{\cos x} = \frac{1}{2} \cdot \frac{1}{\cos x} \right]$

$2\sin x = 1$

$\vdots$