Solutions

① $2\sin(x)+1=0$

⊛ Isolate:

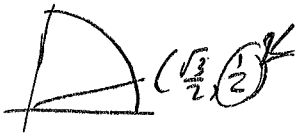
$\Rightarrow 2\sin(x) = -1$

$\Rightarrow \sin(x) = -\frac{1}{2}$

⊛ Quad check:

QIII & QIV

⊛ Ref ∠:



$x_R = \pi/6$

⊛ Solve:

$x = 7\pi/6$

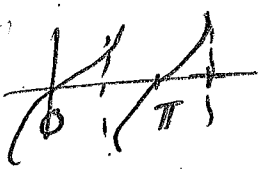
$x = 11\pi/6$

② $\tan(x) - 1 = -1$

⊛ Isolate:

$\tan(x) = 0$

⊛ Quadrantal



$x = 0$

$x = \pi$

③ $4\cos^2(x) + 7 = 9$

⊛ Isolate:

$\Rightarrow 4\cos^2(x) = 2$

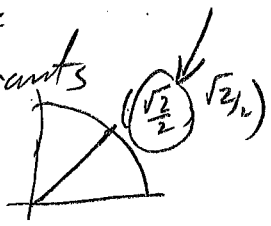
$\Rightarrow \cos^2(x) = \frac{2}{4}$

$\Rightarrow \cos(x) = \pm\sqrt{\frac{2}{4}}$

$= \pm\frac{\sqrt{2}}{2}$

⊛ Quad Check:

all 4 quadrants



⊛ Ref ∠:

$x_R = \pi/4$

⊛ Solve:

$x = \pi/4$ $\quad x = 5\pi/4$

$x = 3\pi/4$ $\quad x = 7\pi/4$

④ $4\tan(x) + 16.2 = 9.6$

⊛ Isolate:

$\Rightarrow 4\tan(x) = -6.6$

$\Rightarrow \tan(x) = -1.65$

⊛ Quad. check:

all 4 quadrants

⊛ Ref ∠:

$x_R = \tan^{-1}(1.65)$ ← NOTE: NO negative sign

$= 1.025732\ldots$

$= 1.03$

⊛ Solve:

$x = 1.03$

$x = \pi - 1.03$

$= 2.111859\ldots$

$= 2.11$

$x = \pi + 1.03$

$= 4.171592\ldots$

$= 4.17$

$x = 2\pi - 1.03$

$= 5.25318\ldots$

$= 5.25$

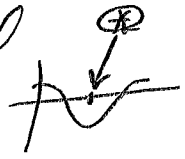
(5) $3\cos(x) - 10 = -13$

* Isolate:

$\Rightarrow 3\cos(x) = -3$

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

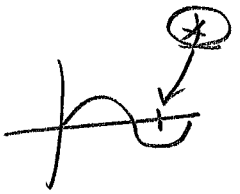
* Quadrantal



$\Rightarrow \boxed{x = \pi}$

(6) $\sin(x) = -1$

$\Rightarrow$ Quadrantal



$\boxed{x = 3\pi/2}$

(7) $5.3\sin(x) + 2.1 = 4.4$

$-2.1 \quad -2.1$

* Isolate:

$\Rightarrow 5.3\sin(x) = 2.3$

$\Rightarrow \sin(x) = \frac{2.3}{5.3}$

$\Rightarrow \sin(x) = .433962\ldots$

$= .43$

* Quadclock

QI QII

* Ref $\measuredangle$:

$x_R = \sin^{-1}(.43)$

$= .44445\ldots$

$= .44$

* Solve

QI: $\boxed{x = .44}$

QII $x = \pi - .44$

$= 2.70159$

$= \boxed{2.70}$

(8) $\cos(x) = 0$

* Quadrantal

$\boxed{x = \pi/2}$, or $\boxed{x = 3\pi/2}$

(9) $6\cos(x) + 3 = 6$

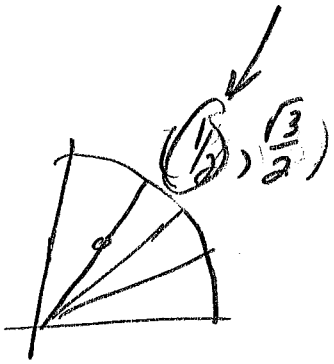
$\Rightarrow 6\cos(x) = 3$

$\Rightarrow \cos(x) = 3/6$

$= 1/2$

* Quadclock

QI QIV



* Ref $\measuredangle$

$x_R = \pi/3$

* Solve

$\boxed{x = \pi/3}$

$x =$ 

$\boxed{x = 5\pi/3}$

(10.) $2\sin(x) + \sqrt{3} = 0$

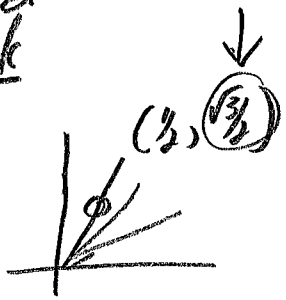
⊛ Isolate:

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

$\Rightarrow \sin(x) = \frac{-\sqrt{3}}{2}$

⊛ Quad. check

QIII QIIII



⊛ Ref ∠:

$x_r = \pi/3$

⊛ solve

$x = 4\pi/3$

$x = 5\pi/3$

(11.) $\tan(x) - 1 = 0$

⊛ Isolate:

$\tan(x) = 1$

⊛ Quadcheck

QI QIII

⊛ Ref ∠

$x_r = \pi/4$

⊛ solve:

QI $x = \pi/4$

QIII $x = 5\pi/4$