

CHAPTER 11 - SOLVING TRIGONOMETRIC EQUATIONS

TI-84 Plus

Press **MODE**, scroll down to **RADIAN**, and press **ENTER**.

```

NORMAL SCI ENG
FLOAT 0 1 2 3 4 5 6 7 8 9
RADIAN DEGREE
FUNC PAR POL SEQ
CONNECTED DDT
SEQUENTIAL SIMUL
REAL a+bi re^θi
FULL HORIZ G-T
SETCLOCK09/04/01 1:13AM
    
```

To solve the equation $2\sin x - \cos x = 4 - x$ for $0 \leq x \leq 2\pi$, press **Y=**, then store $2\sin x - \cos x$ into **Y1** and $4 - x$ into **Y2**.

```

Plot1 Plot2 Plot3
Y1=2sin(X)-cos(X)
Y2=4-X
Y3=
Y4=
Y5=
Y6=
    
```

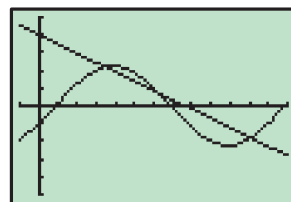
Press **WINDOW**, and set $X_{\min} = -\frac{\pi}{6}$, $X_{\max} = \frac{13\pi}{6}$, and $X_{\text{scl}} = \frac{\pi}{6}$.

(π is entered by pressing **2nd** **^**.)

```

WINDOW
Xmin=-.5235987...
Xmax=6.8067840...
Xscl=.52359877...
Ymin=-5
Ymax=5
Yscl=1
Xres=1
    
```

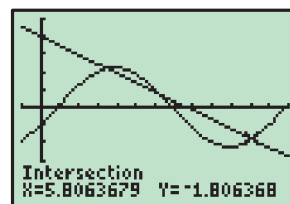
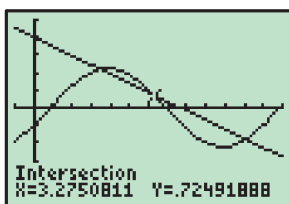
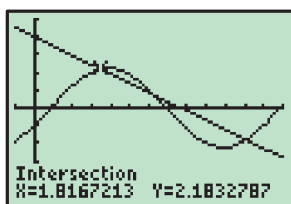
Press **GRAPH** to draw the graphs.



To find where the graphs intersect, press **2nd** **TRACE** (**CALC**) **5:intersect**. Press **ENTER** twice, then move the cursor close to the first intersection point and press **ENTER** once more. The intersection point (1.82, 2.18) is given. Repeat this process to find the remaining intersection points.

```

CALCULATE
1:value
2:zero
3:minimum
4:maximum
5:intersect
6:dy/dx
7:∫f(x)dx
    
```



So, the solutions to $2\sin x - \cos x = 4 - x$ are $x \approx 1.82$, 3.28 , and 5.81 .