

77 (a) **Symbolic:** $\sin 2\theta = 0 \Rightarrow 2\theta = \sin^{-1} 0 \Rightarrow 2\theta = 0^\circ, 180^\circ, 360^\circ, 540^\circ \Rightarrow \theta = 0^\circ, 90^\circ, 180^\circ, 270^\circ$

(b) **Graphical:** Graph $Y_1 = \sin(2X)$ and $Y_2 = 0$ in degree mode in $[0^\circ, 360^\circ, 30^\circ]$ by $[-2, 2, 1]$.

In $[0^\circ, 360^\circ)$, the x -coordinates of the intersection points are $x = 0^\circ, 90^\circ, 180^\circ, 270^\circ$. See *Figure 77a*.

(c) **Numerical:** Table $Y_1 = \sin(2X)$ and $Y_2 = 0$ in degree mode starting at $x = 0$, incrementing by 45.

In the interval $[0^\circ, 360^\circ)$, the tables match when $x = 0^\circ, 90^\circ, 180^\circ, 270^\circ$. See *Figure 77b*.

$[0^\circ, 360^\circ, 30^\circ]$ by $[-2, 2, 1]$

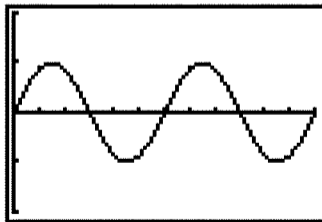


Figure 77a

X	Y1	Y2
0	0	0
45	1	0
90	0	0
135	-1	0
180	0	0
225	1	0
270	0	0

Y1 = sin(2X)

Figure 77b