

69 (a) If angle $\theta = \pi$ is in standard position, the terminal side intersects the unit circle at the point $(-1, 0)$.

Therefore $\sec \pi = \frac{1}{x} = \frac{1}{-1} = -1$ and $\csc \pi = \frac{1}{y} = \frac{1}{0}$ is undefined.

(b) Table $Y_1 = 1/\cos(X)$ and $Y_2 = 1/\sin(X)$ starting at $x = 0$ incrementing by $\frac{\pi}{2}$. From *Figure 69a* we can see that at $x = \pi$, $\sec \pi = -1$ and $\csc \pi$ is undefined.

(c) The graph of $Y_1 = 1/\cos(X)$ in dot mode is shown in *Figure 69b* while the graph of $Y_2 = 1/\sin(X)$ in dot mode is shown in *Figure 69c*. We see that $\sec \pi = -1$ and $\csc \pi$ is undefined.

X	Y ₁	Y ₂
0	1	ERROR
1.5708	ERROR	1
3.14159	-1	ERROR
4.7124	ERROR	-1
6.2832	1	ERROR
7.854	ERROR	1
9.4248	-1	ERROR
X=3.14159265359		

Figure 69a

$[-2\pi, 2\pi, \pi/2]$ by $[-4, 4, 1]$

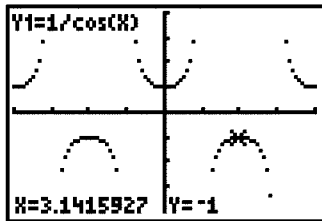


Figure 69b

$[-2\pi, 2\pi, \pi/2]$ by $[-4, 4, 1]$

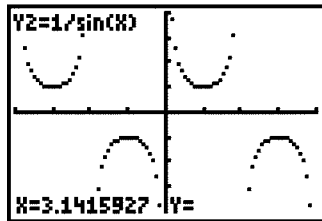


Figure 69c