Section 0.4 Inverse Trigonometric Functions

Short Recall from Trigonometry

Definition: A function f is **periodic** of **period** T if $f(x + T) = f(x)$ for all x such that x and x+T are in the domain of f. The smallest such number $T > 0$ is called the fundamental period.

Example $y = \sin x$ is a periodic function with fundamental period (or just period) 2π.

$$\sin(x + 2\pi) = \sin x \cos 2\pi + \cos x \sin 2\pi = \sin x$$

The graph of $y = \sin x$ below is obtained by plotting points for $0 \leq x \leq 2\pi$ then using the periodic nature of the function to complete the graph. Note that the domain of $y = \sin x$ is $(-\infty, \infty)$ i.e. all reals and range of f is the closed interval $[-1, 1]$. (Also recall $\sin x = 0$ if $x = n\pi$ where n is an integer)
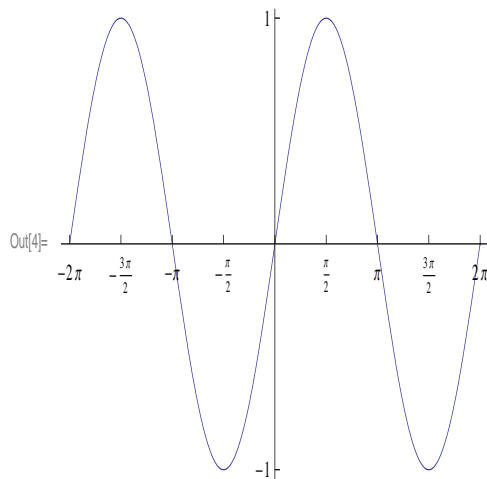

Figure 1: y=sin x