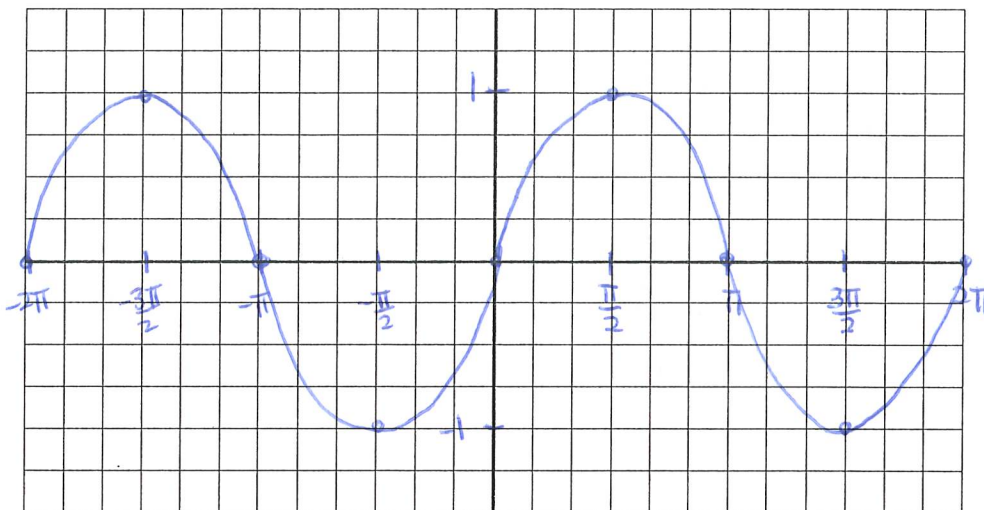


8.4 Graphing Trigonometric Functions Assignment

- a) Graph $y = \sin x$, $y = \cos x$ and $y = \tan x$ for $-2\pi \leq x \leq 2\pi$ without using a table of values.
- b) Explain why each is a function. *They all pass the vertical line test.*
- c) Identify the domain, range, zeros and asymptotes of each graph.
- d) Write a general expression that represents the zeros and asymptotes.

1. $y = \sin x$

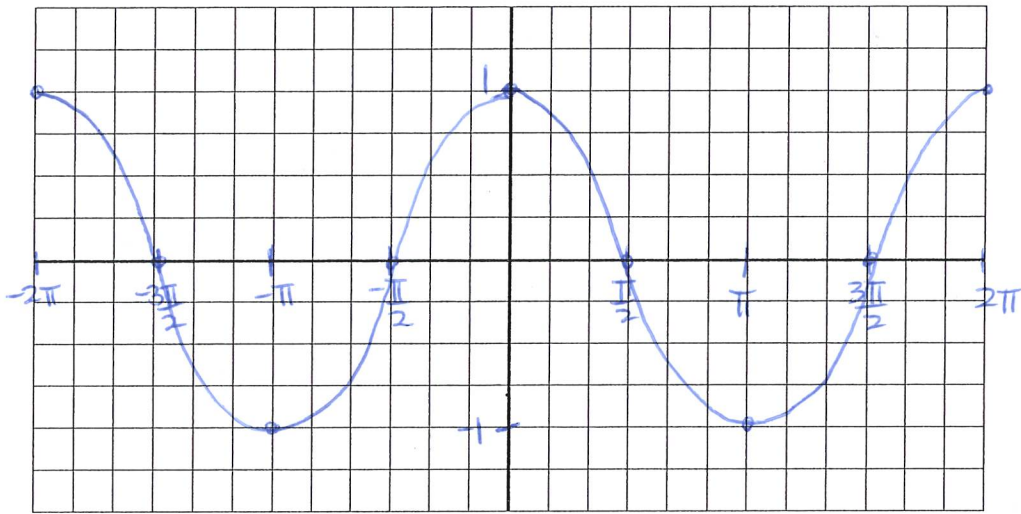


Domain: $x \in \mathbb{R}$

Range: $-1 \leq y \leq 1$

Zeros: $-2\pi, -\pi, 0, \pi, 2\pi, \dots \Rightarrow n\pi \text{ (} n \in \mathbb{Z} \text{)}$

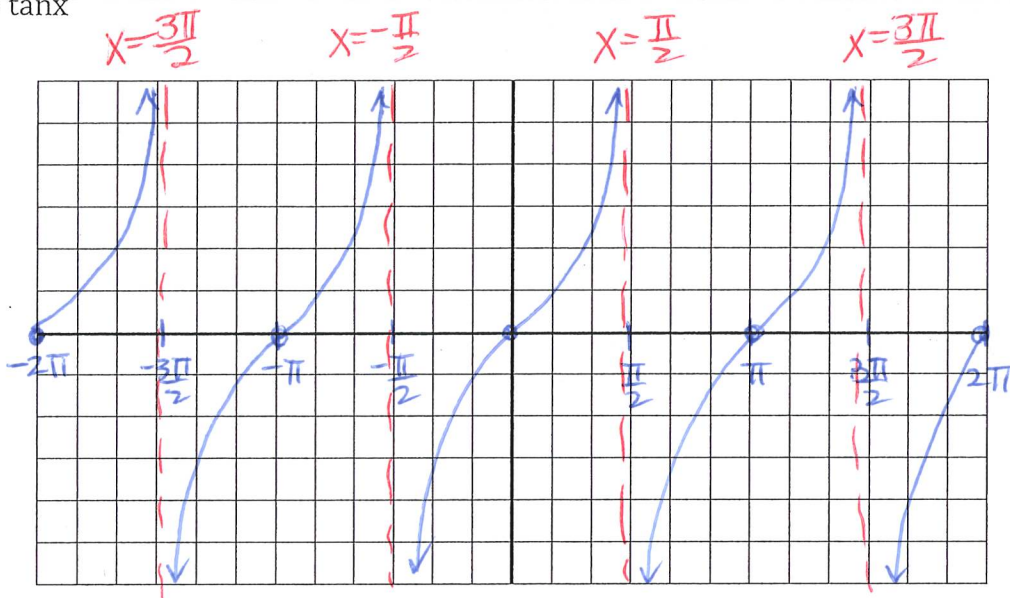
2. $y = \cos x$



Domain: $x \in \mathbb{R}$
 $-1 \leq y \leq 1$

Zeros: $-\frac{3\pi}{2}, -\frac{\pi}{2}, \frac{\pi}{2}, \frac{3\pi}{2} \Rightarrow \frac{\pi}{2} + n\pi \quad (n \in \mathbb{Z})$

3. $y = \tan x$



Domain: $x \in \mathbb{R} \quad (x \neq -\frac{3\pi}{2}, -\frac{\pi}{2}, \frac{\pi}{2}, \frac{3\pi}{2}, \dots) \Rightarrow x \neq \frac{\pi}{2} + n\pi \quad (n \in \mathbb{Z})$

Range: $y \in \mathbb{R}$

Zeros: $-2\pi, -\pi, 0, \pi, 2\pi \Rightarrow n\pi \quad (n \in \mathbb{Z})$

asymptotes: $x = -\frac{3\pi}{2}, -\frac{\pi}{2}, \frac{\pi}{2}, \frac{3\pi}{2} \Rightarrow \frac{\pi}{2} + n\pi \quad (n \in \mathbb{Z})$