

Sandwich Theorem

$$\lim_{x \rightarrow \infty} \frac{\sin(x)}{x} \stackrel{?}{=} 0$$

We know that $-\frac{1}{x} \leq \frac{\sin(x)}{x} \leq \frac{1}{x}$

$$\lim_{x \rightarrow \infty} -\frac{1}{x} = 0 \quad \lim_{x \rightarrow \infty} \frac{1}{x} = 0$$

$$\lim_{x \rightarrow \infty} -\frac{1}{x} \leq \lim_{x \rightarrow \infty} \frac{\sin(x)}{x} \leq \lim_{x \rightarrow \infty} \frac{1}{x}$$

$$0 \leq \lim_{x \rightarrow \infty} \frac{\sin(x)}{x} \leq 0$$

Read about the Sandwich Thm
pg. 61 & 66-67

$\therefore \lim_{x \rightarrow \infty} \frac{\sin(x)}{x}$ is 0.