

Worksheet #23

- (1) Show that $\sin\left(\frac{m\pi x}{L}\right)$ and $\cos\left(\frac{n\pi x}{L}\right)$ are orthogonal for all integers m and n on $-L \leq x \leq L$.

- (2) Find the Fourier series for

$$f(x) = \begin{cases} 2 + x & \text{for } -2 \leq x \leq 0 \\ 2 - x & \text{for } 0 \leq x \leq 2 \end{cases}$$

where $f(x)$ has period of 4.