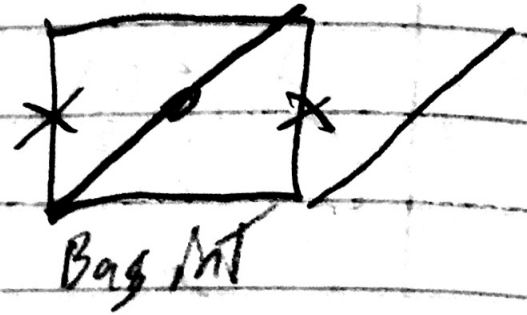


① Theorem of

$$X = \sum_{n=1}^{\infty} \frac{2L(-1)^{n+1}}{n\pi} \sin\left(\frac{n\pi x}{L}\right)$$



Valid for $0 < x < L$

$$\frac{d}{dx} X = \sum_{n=1}^{\infty} \frac{2L(-1)^{n+1}}{n\pi} \cos\left(\frac{n\pi x}{L}\right) \frac{d}{dx}$$

$$1 = \sum_{n=1}^{\infty} 2(-1)^{n+1} \cos\left(\frac{n\pi x}{L}\right)$$

does not converge n^{th} term test