

Exercise 2.3.5

Evaluate (be careful if $n = m$)

$$\int_0^L \sin \frac{n\pi x}{L} \sin \frac{m\pi x}{L} dx \quad \text{for } n > 0, m > 0.$$

Use the trigonometric identity

$$\sin a \sin b = \frac{1}{2} [\cos(a - b) - \cos(a + b)].$$