Exercise 2.3.6

Evaluate

$$\int_0^L \cos\frac{n\pi x}{L}\cos\frac{m\pi x}{L}\,dx \qquad \text{for } n \geq 0,\ m \geq 0.$$

Use the trigonometric identity

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

(Be careful if $a - b = 0$ or $a + b = 0$.)