Exercise 7 Problem 3(a)

$$\int_0^1 \sin(\sqrt{x})\,dx = \int_0^1 [\sin(\sqrt{x}) - \sqrt{x}]\,dx + \frac{2}{3}$$

$$= \int_0^1 \sin(\sqrt{x})\,dx - \int_0^1 \sqrt{x}\,dx + \frac{2}{3}$$

$$= \int_0^1 \sin(\sqrt{x})\,dx - \left| \frac{2}{3}x^{3/2} + \frac{2}{3} \right.$$

$$= \int_0^1 \sin(\sqrt{x})\,dx - \frac{2}{3}(1^{3/2} - 0^{3/2}) + \frac{2}{3}$$

$$= \int_0^1 \sin(\sqrt{x})\,dx \quad \begin{matrix} 0 \\ 0 \end{matrix}$$