Exercise 26

Evaluate the integral.

$$\int_{-5}^{5} e\,dx$$

Solution

According to part 2 of the fundamental theorem of calculus,

$$\int_a^b f(x)\,dx = F(b) - F(a),$$

where F is an antiderivative of f.

$$\begin{aligned}\int_{-5}^{5} e\,dx &= (ex)\Big|_{-5}^{5} \\ &= e\,(x)\Big|_{-5}^{5} \\ &= e\,[5-(-5)] \\ &= 10e\end{aligned}$$