Exercise 16

Differentiate the function.

$$h(t) = \sqrt[4]{t} - 4e^t$$

Solution

Rewrite the given function.

$$h(t) = t^{1/4} - 4e^t$$

Take the derivative of this function.

$$h'(t) = \frac{d}{dt}(t^{1/4} - 4e^t)$$

Use the difference rule.

$$h'(t) = \frac{d}{dt}(t^{1/4}) - \frac{d}{dt}(4e^t)$$

Use the constant multiple rule.

$$h'(t) = \frac{d}{dt}(t^{1/4}) - 4\frac{d}{dt}(e^t)$$

Use the power rule and the exponential function rule.

$$h'(t) = \left(\frac{1}{4}t^{-3/4}\right) - 4(e^t)$$

Therefore,

$$h'(t) = \frac{1}{4}t^{-3/4} - 4e^t.$$