Exercise 10

Use Part 1 of the Fundamental Theorem of Calculus to find the derivative of the function.

$$h(u) = \int_0^u \frac{\sqrt{t}}{t+1}\,dt$$

Solution

According to part 1 of the fundamental theorem of calculus,

$$\frac{d}{dx}\int_a^x f(t)\,dt = f(x).$$

As a result,

$$h'(u) = \frac{d}{du}\int_0^u \frac{\sqrt{t}}{t+1}\,dt = \frac{\sqrt{u}}{u+1}.$$