

$$\int \frac{x}{\sqrt{x+1}+1} dx$$

$$t = \sqrt{x+1} \text{ とおくと } t^2 - 1 = x \text{ となり}$$

$$dt = \frac{dx}{2\sqrt{x+1}} \text{ より } dx = 2t dt.$$

$$\text{よって (5式)} = \int \frac{t^2 - 1}{t + 1} \cdot 2t dt$$

$$= \int \frac{(t+1)(t-1)}{t+1} \cdot 2t dt$$

$$= \int (2t^2 - 2t) dt$$

$$= \frac{2}{3}t^3 - t^2 + C_1$$

$$= \frac{2}{3}(x+1)\sqrt{x+1} - (x+1) + C_1 \quad (C_1 \text{ は定数})$$

$$= \boxed{\frac{2}{3}(x+1)\sqrt{x+1} - x + C \quad (C \text{ は定数})}$$