

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

$$x+1=u \text{ とおくと } x=u-1 \quad \therefore \quad dx=du \text{ となり}$$

$$\int \frac{x}{\sqrt{x+1}} dx = \int \frac{u-1}{\sqrt{u}} du$$

$$= \int \left(\sqrt{u} - \frac{1}{\sqrt{u}} \right) du$$

$$= \frac{2}{3} u^{\frac{3}{2}} - 2 u^{\frac{1}{2}} + C$$

$$= \frac{2}{3} (x+1)\sqrt{x+1} - 2\sqrt{x+1} + C$$

(C は積分定数)