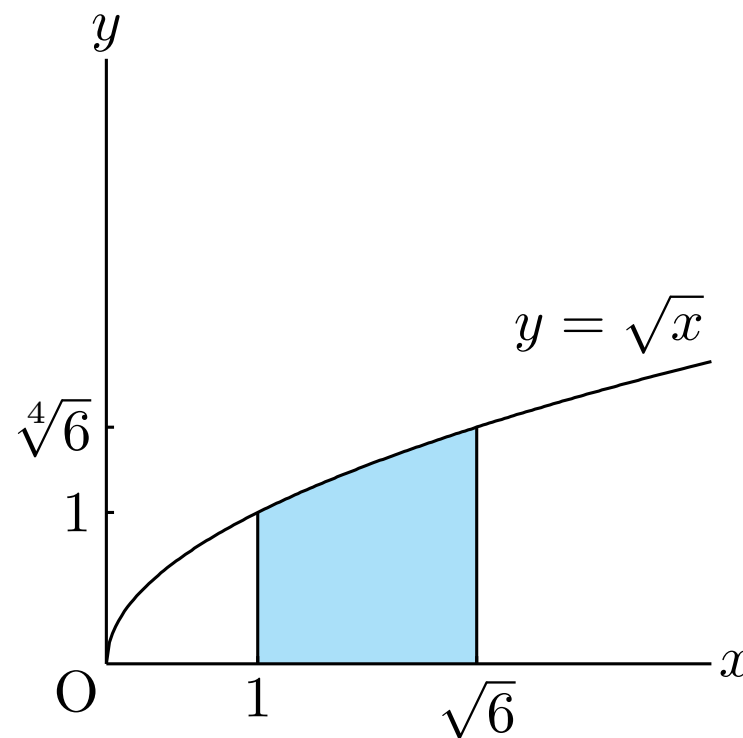


積分領域 D は図の通り.

$$\begin{aligned} & \iint_D \frac{y}{\sqrt{x^2 + 3}} dx dy \\ &= \int_1^{\sqrt{6}} \left\{ \int_0^{\sqrt{x}} \frac{y}{\sqrt{x^2 + 3}} dy \right\} dx \\ &= \int_1^{\sqrt{6}} \frac{1}{\sqrt{x^2 + 3}} \left[\frac{1}{2} y^2 \right]_0^{\sqrt{x}} dx \end{aligned}$$



$$= \frac{1}{2} \int_1^{\sqrt{6}} \frac{x}{\sqrt{x^2 + 3}} dx$$

$$x^2 + 3 = t \text{ とおくと}$$

$$2x dx = dt$$

$$x dx = \frac{1}{2} dt$$

x	$1 \rightarrow \sqrt{6}$
t	$4 \rightarrow 9$

$$\begin{aligned}\text{与式} &= \frac{1}{4} \int_4^9 \frac{1}{\sqrt{t}} dt \\ &= \frac{1}{4} \left[2\sqrt{t} \right]_4^9 = \frac{1}{2}\end{aligned}$$