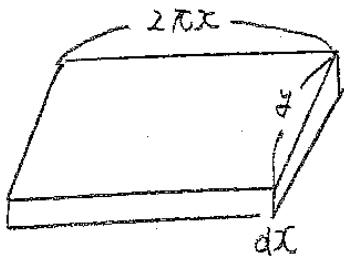
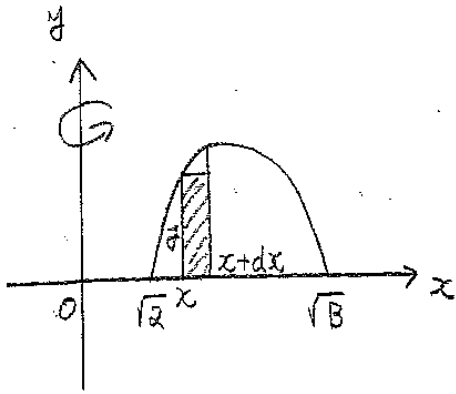


(別)



$$\frac{V}{2} = \int_{\sqrt{a}}^{\sqrt{B}} 2\pi x y dx$$

$$= \int_{\sqrt{a}}^{\sqrt{B}} 2\pi x \sqrt{-(x^2 - \frac{1}{2})^2 + \frac{1}{4} - a} dx$$

$$x^2 - \frac{1}{2} = t \quad \text{と置く}$$

$$2x dx = dt$$

x	$\sqrt{a} \rightarrow \sqrt{B}$
t	$a - \frac{1}{2} \rightarrow B - \frac{1}{2}$

$$a - \frac{1}{2} = \frac{1 - \sqrt{1-4a}}{2} - \frac{1}{2} = \frac{-\sqrt{1-4a}}{2}$$

$$B - \frac{1}{2} = \frac{1 + \sqrt{1-4a}}{2} - \frac{1}{2} = \frac{\sqrt{1-4a}}{2}$$

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$$\int_{\frac{-\sqrt{1-4a}}{2}}^{\frac{\sqrt{1-4a}}{2}} \pi \sqrt{-t^2 + \frac{1}{4} - a} dt$$

$$= \pi \int_{-\sqrt{\frac{1}{4}-a}}^{\sqrt{\frac{1}{4}-a}} \sqrt{\frac{1}{4}-a-x^2} dx$$

$$= \pi \cdot \pi \left(\sqrt{\frac{1}{4}-a}\right)^2 \cdot \frac{1}{2}$$

$$= \left(\frac{1}{4}-a\right) \frac{1}{2} \pi^2$$

$$\therefore V = \pi^2 \left(\frac{1}{4}-a\right)$$

$$= \frac{\pi^2}{4} (1-4a)$$

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