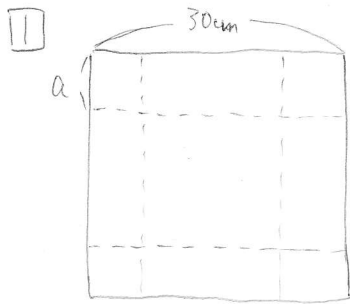


§1.2.3

問題B



$$V(a) = (30-2a)^2 \times a$$

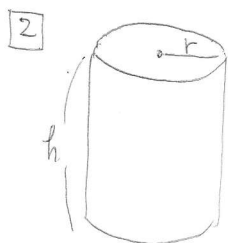
$$= 4a^3 - 120a^2 + 900a$$

$$V'(a) = 12a^2 - 240a + 900$$

$$= 12(a^2 - 20a + 75)$$

$$= 12(a-15)(a-5)$$

a	0	...	5	...	15
V'(a)	/		+		0
V(a)	/		↗		Max
					↘
					/



$$V = \pi r^2 h$$

$$r + h = 30$$

$$\left\{ \begin{aligned} V &= \pi r^2 (30-r) \\ &= 30\pi r^2 - \pi r^3 \end{aligned} \right.$$

$$V' = 60\pi r - 3\pi r^2$$

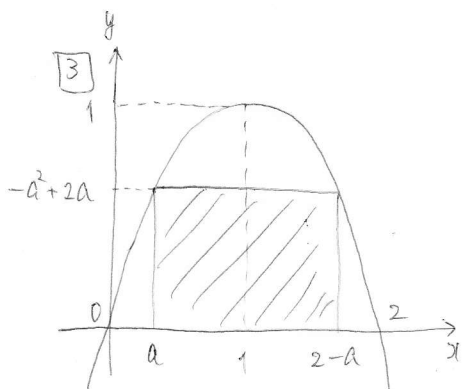
$$= 3\pi r(20-r)$$

r	0	...	20	...	30
V'	/		+		0
V	/		↗		Max
					↘
					/

LTはかゝる。

$$r_{\max} = 20 \text{ cm}, \quad h_{\max} = 10 \text{ cm}$$

$$V_{\max} = 4000 \pi \text{ cm}^3$$



$$S(a) = (-a^2+2a) \times (2-2a)$$

$$= 2a^3 - 4a^2 - 2a^2 + 4a$$

$$= 2a^3 - 6a^2 + 4a$$

$$S'(a) = 6a^2 - 12a + 4 = 2(3a^2 - 6a + 2) = 0 \text{ 时 } \lambda = \frac{3 \pm \sqrt{9-6}}{3} = \frac{3 \pm \sqrt{3}}{3}$$

a	0	...	$\frac{3-\sqrt{3}}{3}$	...	1
S'(a)	/		+		0
S(a)	/		↗		Max
					↘
					/

$$S\left(\frac{3-\sqrt{3}}{3}\right) = \frac{4\sqrt{3}}{9}$$