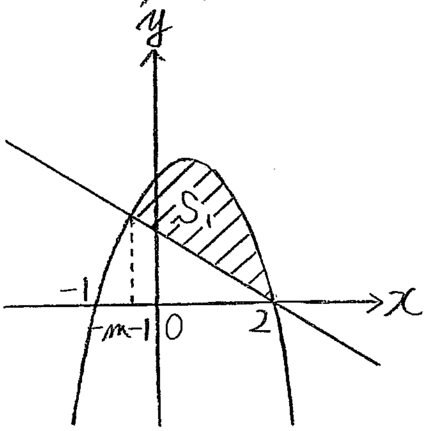
499 $y=2+x-x^2$

$=-(x^2-x-2)$

$=-(x-2)(x+1)$

$x=2,-1$



$(2, 0)$を通る直線 g は、

$y-0=m(x-2)$

$y=mx-2m$ と表される。

$$\begin{cases} y=2+x-x^2 \\ y=mx-2m \end{cases}$$

$2+x-x^2=mx-2m$

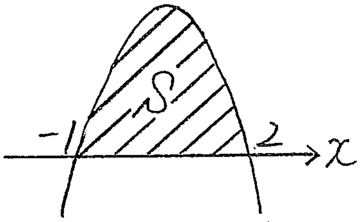
$x^2+(m-1)x-2m-2=0$

$x^2+(m-1)x-2(m+1)=0$

$(x-2)\{x+(m+1)\}=0$

$x=2, -m-1$

499
(続き)



$$S=\int_{-1}^{2}(-x^2+x+2)dx$$
$$=-\int_{-1}^{2}(x^2-x-2)dx$$
$$=-\int_{-1}^{2}(x-2)(x+1)dx$$
$$=-\left\{-\frac{1}{6}(2+1)^3\right\}$$
$$=\frac{27}{6}$$
$$=\frac{9}{2}$$

$$\therefore S_1=\int_{-m-1}^{2}\{(2+x-x^2)-(mx-2m)\}dx$$
$$=\int_{-m-1}^{2}\{-x^2-(m-1)x+2(m+1)\}dx$$
$$=-\int_{-m-1}^{2}\{x^2+(m-1)x-2(m+1)\}dx$$
$$=-\int_{-m-1}^{2}(x-2)\{x+(m+1)\}dx$$
$$=-\left[-\frac{1}{6}\{2-(-m-1)\}^3\right]$$

499
(続き)

$$=\frac{1}{6}(3+m)^3=\frac{1}{2}\cdot\frac{9}{2}$$

$$=\frac{9}{4}$$

$$(3+m)^3=\frac{9}{4}\times 6$$

$$=\frac{27}{2}$$

$$3+m=\sqrt[3]{\frac{27}{2}}$$

$$=\frac{\sqrt[3]{27}}{\sqrt[3]{2}}$$

$$=\frac{\sqrt[3]{3\cdot 3\cdot 3}}{\sqrt[3]{2}}$$

$$=\frac{3}{\sqrt[3]{2}}$$

$$=\frac{3\cdot\sqrt[3]{2}\cdot\sqrt[3]{2}}{\sqrt[3]{2}\cdot\sqrt[3]{2}\cdot\sqrt[3]{2}}$$

$$=\frac{3\sqrt[3]{4}}{2}$$

$$m=\frac{3\sqrt[3]{4}}{2}-3 \text{ (答)}$$

$$=\frac{3\sqrt[3]{4}-6}{2} \text{ (答)}$$