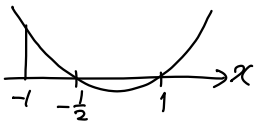
文 ②

$$x^2-\frac{1}{2}x-\frac{1}{2}$$

$$=\left(x+\frac{1}{2}\right)(x-1)$$



$$\begin{cases} \geqq 0 & (\text{if } -1 \leqq x \leqq -\frac{1}{2}) \\ \leqq 0 & (\text{if } -\frac{1}{2} \leqq x \leqq 1) \end{cases}$$

これより

$$\int_{-1}^{1} \left|x^2-\frac{1}{2}x-\frac{1}{2}\right| dx$$

$$=\int_{-1}^{-\frac{1}{2}} \left(x^2-\frac{1}{2}x-\frac{1}{2}\right) dx+\int_{-\frac{1}{2}}^{1} \left(-x^2+\frac{1}{2}x+\frac{1}{2}\right) dx$$

$$=\frac{1}{3}\left(-\frac{1}{8}+1\right)-\frac{1}{4}\left(\frac{1}{4}-1\right)-\frac{1}{2}\left(-\frac{1}{2}+1\right)$$

$$-\frac{1}{3}\left(1+\frac{1}{8}\right)+\frac{1}{4}\left(1-\frac{1}{4}\right)+\frac{1}{2}\left(1+\frac{1}{2}\right)$$

$$=-\frac{1}{12}+\frac{3}{8}+\frac{1}{2}$$

$$=\underline{\frac{19}{24}}$$