

定積分

【練習問題 53】

$$(1) \int_0^2 (4x^3 - 3x^2 + 5x + 3) dx$$

Step 1. $\int (4x^3 - 3x^2 + 5x + 3) dx =$

Step 2.

$$\begin{aligned} \int_0^2 (4x^3 - 3x^2 + 5x + 3) dx &= \left[\text{ } \right]_0^2 \\ &= \text{ } - \text{ } \\ &= \text{ } \end{aligned}$$

$$(2) \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \sin x dx$$

Step 1. $\int \sin x dx =$

Step 2.

$$\begin{aligned} \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} \sin x dx &= \left[\text{ } \right]_{\frac{\pi}{3}}^{\frac{\pi}{2}} \\ &= \text{ } - \text{ } \\ &= \text{ } \end{aligned}$$

$$(3) \int_0^{\frac{1}{2}} \frac{1}{\sqrt{1-x^2}} dx$$

Step 1. $\int \frac{1}{\sqrt{1-x^2}} dx =$

Step 2.

$$\begin{aligned} \int_0^{\frac{1}{2}} \frac{1}{\sqrt{1-x^2}} dx &= \left[\text{input} \right]_0^{\frac{1}{2}} \\ &= \text{input} - \text{input} \\ &= \text{input} \end{aligned}$$

$$(4) \int_{-1}^{\sqrt{3}} \frac{1}{1+x^2} dx$$

Step 1. $\int \frac{1}{1+x^2} dx =$

Step 2.

$$\begin{aligned} \int_{-1}^{\sqrt{3}} \frac{1}{1+x^2} dx &= \left[\text{input} \right]_{-1}^{\sqrt{3}} \\ &= \text{input} - \text{input} \\ &= \text{input} \end{aligned}$$

【例題 66】

$$(1) \int_0^1 (2x + 1)^3 dx$$

$$t = \boxed{} \text{とおくと } dx = \boxed{} dt$$

x	→
t	→

$$\int_0^1 (2x + 1)^3 dx = \int_{}^{} \boxed{} dt$$

$$\left(\int \boxed{} dt = \boxed{} \text{より} \right)$$

$$= \left[\boxed{} \right]_{}^{}$$

$$= \boxed{}$$

$$(2) \int_0^2 \sqrt{x+1} dx$$

$$t = \boxed{} \text{とおくと } dx = \boxed{} dt$$

x	→
t	→

$$\int_0^2 \sqrt{x+1} dx = \int_{}^{} \boxed{} dt$$

$$\left(\int \boxed{} dt = \boxed{} \text{より} \right)$$

$$= \left[\boxed{} \right]_{}^{}$$

$$= \boxed{}$$

$$(3) \int_1^e \log x \, dx$$

$$\int \log x \, dx = \boxed{}$$

$$\text{したがって, } \int_1^e \log x \, dx = \left[\boxed{} \right]_1^e$$

$$= \boxed{}$$

番外編

$$\int_{-1}^{\sqrt{3}} \frac{1}{1+x^2} dx$$

$$x = \boxed{} \quad \text{とおくと } dx = \boxed{} d\theta$$

x	\rightarrow
θ	\rightarrow

$$\int_{-1}^{\sqrt{3}} \frac{1}{1+x^2} dx = \int_{}^{} \boxed{} d\theta$$

$$\left(\int \boxed{} d\theta = \boxed{} \text{より} \right)$$

$$= \left[\boxed{} \right]_{}^{}$$

$$= \boxed{}$$

こうすれば高校の数学 III の内容になる.