

積分の計算

$$\int x^{\square} dx = \frac{1}{\square + 1} x^{\square + 1} \qquad \int \frac{1}{x} dx = \log |x|$$

【例題 49】

(1)

$$\int x^5 dx = \int x^{\square} dx = \frac{1}{\square + 1} x^{\square + 1} = \square$$

(2)

$$\int x^{-7} dx = \int x^{\square} dx = \frac{1}{\square + 1} x^{\square + 1} = \square$$

(3) $\frac{1}{x^3} = x^{\square}$ より

$$\int \frac{1}{x^3} dx = \int x^{\square} dx = \frac{1}{\square + 1} x^{\square + 1} = \square$$

(4) $\sqrt[5]{x^6} = x^{\square}$ より

$$\int \sqrt[5]{x^6} dx = \int x^{\square} dx = \frac{1}{\square + 1} x^{\square + 1} = \square$$

(5)

$$\int \left(t^{-1} + \frac{3}{t^4} \right) dt = \int (t \square + 3t \square) dt = \square$$

(6)

$$\int \frac{1}{\sqrt{x}} dx = \int x \square dx = \frac{1}{\square + 1} x \square^{+1} = \square$$

(4) や (6) の場合, $\frac{1}{\square + 1}$ を計算すると分数の中に分数が出てくるので,

先に $x \square^{+1}$ を計算する方がよい.