

## 積分の計算 3.部分積分法

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1 [(2) 立教大]

次の積分を計算せよ.

(1)  $\int x e^{2x} dx$

(2)  $\int_0^1 x^2 e^x dx$

(3)  $\int (x-1)e^x dx$

2

次の積分を計算せよ.

(1)  $\int x \sin x dx$

(2)  $\int \frac{x}{\cos^2 x} dx$

(3)  $\int_0^\pi x \sin^2 x dx$

(4)  $\int x^2 \sin x dx$

3

次の積分を計算せよ.

(1)  $\int \log x dx$

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

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

(4)  $\int_1^e (\log x)^2 dx$

4

次の定積分を求めよ.

(1)  $\int_\alpha^\beta (x-\alpha)(x-\beta) dx$

(2)  $\int_1^2 (x-1)(x-2)^3 dx$

5

$I = \int e^x \sin x dx$ ,  $J = \int e^x \cos x dx$  とする.  $I, J$  を計算せよ.