

置換積分・部分積分 問題 1

1 置換積分法を使って次の不定積分を求めよ. ただし, 積分定数は C とせよ.

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

$$(2) I = \int \sin x \cos^4 x dx$$

$$(3) I = \int \frac{\log x}{x} dx$$

$$(4) I = \int \frac{x}{\sqrt{1-x^2}} dx$$

$$(5) I = \int \frac{x}{x^2+1} dx$$

$$(6) I = \int \frac{\cos x}{\sin^2 x + 1} dx$$

$$(7) I = \int \frac{1}{x^2 + 2x + 5} dx$$

$$(8) I = \int \frac{1}{\sqrt{-x^2 + 2x + 3}} dx$$

$$(9) I = \int \sqrt{1-x^2} dx$$

$$(10) I = \int \frac{1}{\sqrt{x^2+1}} dx$$

2 部分積分法を使って次の不定積分を求めよ. ただし, 積分定数は C とせよ.

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

$$(2) I = \int x \cos x dx$$

$$(3) I = \int \log x dx$$

$$(4) I = \int x \log x dx$$

$$(5) I = \int x(\log x)^2 dx$$

$$(6) I = \int \sin^{-1} x dx$$

$$(7) I = \int \cos^{-1} x dx$$

$$(8) I = \int \tan^{-1} x dx$$

$$(9) I = \int \sqrt{1-x^2} dx$$

$$(10) I = \int \sqrt{x^2+1} dx$$