

① 次の積分をなさい。(基本、指数関数)

(1) $\int x^2 dx$

(2) $\int \sqrt[3]{x} dx$

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

(4) $\int \frac{x^3 - 2x^2 + x - 3}{x^2} dx$

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

(6) $\int e^x dx$

(7) $\int 2^x dx$

② 次の積分をなさい。(三角関数)

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

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

(3) $\int \operatorname{cosec}^2 x dx$

(3) $\int \tan^2 x dx$

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

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

(6) $\int \frac{dx}{x^2+4}$

③ 次の積分をなさい。(定積分, $\int \frac{f'(x)}{f(x)} dx$)

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

(2) $\int_0^{\frac{\pi}{2}} (e^x + \cos x) dx$

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

(4) $\int \frac{1}{x} dx$

(5) $\int \tan x dx$

(6) $\int \frac{dx}{x \log x}$

④ 次の積分をなさい。(置換積分法)

(1) $\int (3x - 2)^5 dx$

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

(3) $\int x(2x + 3)^5 dx$

(4) $\int x^2 \sqrt{x+2} dx$

(5) $\int \frac{x^2}{\sqrt{x-1}} dx$

⑤ 次の積分をなさい。(定積分の置換積分法, 部分積分法)

(1) $\int_1^2 (2x - 3)^4 dx$

(2) $\int_1^e \frac{\log x}{x} dx$

(3) $\int_0^1 \sqrt{4-x^2} dx$

(4) $\int x \cos x dx$

(5) $\int \log x dx$

(6) $\int_0^{\frac{\pi}{2}} x \sin x$

⑥ 次の積分をなさい。(そのほかの積分)

(1) $\int e^{3x} \sin 4x dx$

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

(3) $\int \frac{x}{(x+1)(x+2)} dx$

(4) $\int \sin 5x \cos 4x dx$

(5) $\int \frac{dx}{\sin x}$

(6) $\int_0^{\frac{\pi}{2}} \sin^4 x dx$

(7) $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} \cos^3 2x dx$