

数Ⅲ積分計算ランダム演習（基本レベル） Ver1.1

1 次の不定積分や定積分を計算せよ.

$$(1) \int x(x-1)^7 dx$$

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

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

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

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

$$(6) \int_0^1 \frac{x}{x^2+1} dx$$

$$(7) \int_{-1}^1 \frac{1}{x^2+1} dx$$

$$(8) \int \frac{x^2}{1-x} dx$$

$$(9) \int_0^{\frac{1}{2}} \frac{1}{1-x^2} dx$$

$$(10) \int \frac{x}{1-x^2} dx$$

$$(11) \int_{-1}^1 \frac{x^3}{x^2+1} dx$$

$$(12) \int \frac{x}{(x+1)^2} dx$$

$$(13) \int \frac{(x+1)^2}{x} dx$$

$$(14) \int_0^{\frac{1}{2}} \frac{x}{\sqrt{1-x^2}} dx$$

$$(15) \int \frac{x-1}{\sqrt{x}} dx$$

$$(16) \int \frac{1}{\sqrt{x+1}-\sqrt{x}} dx$$

$$(17) \int_0^{\frac{1}{2}} \frac{1}{\sqrt{1-x^2}} dx$$

$$(18) \int_0^{\frac{1}{2}} \frac{1}{\sqrt{1-x}} dx$$

$$(19) \int_0^{\frac{1}{2}} \frac{x+1}{\sqrt{1-x}} dx$$

$$(20) \int_1^2 \frac{1}{x^2-2x+2} dx$$

$$(21) \int_0^1 \frac{1}{x^2+2x+1} dx$$

$$(22) \int \frac{5x^2+x-1}{x^3+1} dx$$

$$(23) \int_1^{\frac{3}{2}} \frac{1}{\sqrt{x(2-x)}} dx$$

$$(24) \int_0^2 \sqrt{x(2-x)} dx$$

2 次の不定積分や定積分を計算せよ.

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

$$(2) \int_0^1 x e^{-2x} dx$$

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

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

$$(5) \int_{-1}^1 (e^x + e^{-x})^2 dx$$

$$(6) \int \frac{e^x}{e^x-1} dx$$

$$(7) \int \frac{x}{e^x} dx$$

$$(8) \int \frac{1}{e^x-1} dx$$

$$(9) \int \frac{1}{e^x - e^{-x}} dx$$

$$(10) \int \frac{e^x - e^{-x}}{e^x + e^{-x}} dx$$

$$(11) \int \frac{e^{2x}}{(e^x+1)^2} dx$$

$$(12) \int_{-1}^1 \frac{e^x}{e^x + e^{-x}} dx$$

$$(13) \int \frac{e^x - e^{-x}}{e^{-x}} dx$$

$$(14) \int \log 2x dx$$

$$(15) \int \log x^2 dx$$

$$(16) \int (\log x)^2 dx$$

$$(17) \int \log_2 x dx$$

$$(18) \int x \log x dx$$

$$(19) \int x \log x^2 dx$$

$$(20) \int_1^e \frac{\log x}{x} dx$$

$$(21) \int \log(x + \sqrt{x^2+1}) dx$$

$$(22) \int \frac{\log x}{x^2} dx$$

$$(23) \int \frac{1}{x \log x} dx$$

3 次の不定積分や定積分を計算せよ.

$$(1) \int x^2 \sin x \, dx$$

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

$$(3) \int x \sin^2 x \, dx$$

$$(4) \int e^x \cos x \, dx$$

$$(5) \int \sin^3 x \, dx$$

$$(6) \int \cos^4 x \, dx$$

$$(7) \int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \cos^5 x \, dx$$

$$(8) \int_0^{\frac{\pi}{2}} \sin^2 x \cos x \, dx$$

$$(9) \int \sin^2 x \tan x \, dx$$

$$(10) \int_{-\pi}^{\pi} \sin x \cos 2x \, dx$$

$$(11) \int_0^{\frac{\pi}{2}} \sin 2x \cos 2x \, dx$$

$$(12) \int \sin 2x \cos 3x \, dx$$

$$(13) \int \tan x \, dx$$

$$(14) \int \tan^2 x \, dx$$

$$(15) \int \frac{1}{\tan x} \, dx$$

$$(16) \int \frac{1}{\tan^2 x} \, dx$$

$$(17) \int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} x^2 \tan x \, dx$$

$$(18) \int_0^{\frac{\pi}{4}} \frac{\tan^2 x}{\cos^2 x} \, dx$$

$$(19) \int \frac{1}{\cos^4 x} \, dx$$

$$(20) \int \frac{1}{\sin x} \, dx$$

$$(21) \int \frac{1}{1 - \sin x} \, dx$$

$$(22) \int \frac{1}{1 - \sin^2 x} \, dx$$

$$(23) \int \frac{\cos x}{1 - \sin x} \, dx$$

$$(24) \int \frac{\sin x}{\sqrt{1 - \cos x}} \, dx$$

$$(25) \int \frac{1}{\sin^2 x \cos^2 x} \, dx$$

$$(26) \int \frac{1}{\cos^2 x \tan x} \, dx$$

$$(27) \int \frac{x}{\cos^2 x} \, dx$$