

高等数学习题课

2022年11月25日

求 $f(x) = \sin^2 x$ 带有皮亚诺余项的麦克劳林公式

求 $f(x) = \ln \frac{1-x}{1+x}$ 带有皮亚诺余项的麦克劳林公式, 并求 $f^{(9)}(0)$

判断 $e^x \sin x - x(1 + x)$ 是 x 的几阶无穷小

求(1) $\int a^x dx$

(2) $\int \sin x dx$

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

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

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

求(1) $\int a^x dx = \frac{a^x}{\ln a} + C$

(2) $\int \sin x dx = -\cos x + C$

(3) $\int \frac{1}{\cos^2 x} dx = \tan x + C$

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

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

求(1) $\int \tan x \, dx$

(2) $\int \cot x \, dx$

(3) $\int \frac{1}{\cos x} \, dx$

(4) $\int \frac{1}{a^2 + x^2} \, dx$

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

求(1) $\int \tan x \, dx = -\ln|\cos x| + C$

(2) $\int \cot x \, dx = \ln|\sin x| + C$

(3) $\int \frac{1}{\cos x} \, dx = \ln \left| \frac{1}{\cos x} + \tan x \right| + C$

(4) $\int \frac{1}{a^2 + x^2} \, dx = \frac{1}{a} \arctan \frac{x}{a} + C$

(5) $\int \frac{1}{\sqrt{a^2 - x^2}} \, dx = \arcsin \frac{x}{a} + C$

求 $\int \sqrt{x}(x^2 - 5)dx$.

求 $\int \frac{(x-1)^3}{x^2} dx$

求 $\int \frac{1}{x^2(1+x^2)} dx$

求 $\int \sin^2 \frac{x}{2} dx$

求 $\int 2^x e^x dx$

求 $\int 2xe^{x^2} dx$

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

求 $\int \frac{1}{\sin^2 x + 2\cos^2 x} dx$

求 $\int \frac{1}{e^x(1+e^{2x})} dx$

求 $\int \frac{\arctan \sqrt{x}}{\sqrt{x}(1+x)} dx$

求 $\int \frac{1}{\sqrt{5-2x-x^2}} dx$.

求 $\int \frac{x^2}{\sqrt{a^2-x^2}} dx (a > 0)$.