

تمرینات تکمیلی انتگرال

تمرین ۱

انتگرال‌های نامعین زیر را محاسبه کنید.

$$۱. \int \frac{1+\cos^3 x}{\cos^3 x} dx$$

$$۲. \int \tan^2 x dx$$

$$۳. \int \frac{2+3\sin x}{\cos^3 x} dx$$

$$۴. \int \sqrt{x^2 + 1} dx$$

$$۵. \int x e^x \cos x dx$$

$$۶. \int x (\tan^{-1} x)^2 dx$$

$$۷. \int \frac{d\theta}{\cos \theta (1 + \sin \theta)}$$

$$۸. \int \frac{dx}{(x-1)(x^2-1)^2}$$

$$۹. \int \frac{dx}{x^2 \sqrt{x^2 - a^2}}, \text{ به ازای } x > a > 0$$

$$۱۰. \int \frac{dx}{x(2+x^2)\sqrt{1-x^2}}$$

$$۱۱. \int \frac{dx}{x^2(x^2-1)^{3/2}}$$

$$۱۲. \int \frac{dx}{x(x^2+1)^{3/2}}$$

$$۱۳. \int \frac{x\sqrt{2-x^2}}{\sqrt{x^2+1}} dx$$

$$۱۴. \int \frac{dx}{x^2 \sqrt[3]{(x^2+1)^2}}, \text{ به ازای } x > 0$$

$$۱۵. \int x^2 \sin^{-1}(2x) dx$$

تمرینات تکمیلی انتگرال

$$\int \frac{\sin(\ln x)}{x^{\frac{1}{2}}} dx \quad .16$$

$$\int (x^{\frac{1}{2}} - x^{\frac{1}{3}}) \sqrt[3]{x^{\frac{1}{2}} + \frac{1}{2}} dx \quad .17$$

$$\int \sqrt[3]{\tan x} dx \quad .18$$

$$\int \sqrt{\frac{\ln(x + \sqrt{x^2 + 1})}{1 + x^2}} dx \quad .19$$

$$\int \cos(\ln x) dx \quad .20$$

$$\int \sqrt{a^2 - x^2} dx \quad .21$$

$$\int \frac{dx}{\sqrt{\sin^2 x} x \cos x} \quad .22$$

$$\int \frac{\cos^{\frac{1}{2}} x}{\sin^{\frac{1}{2}} x} dx \quad .23$$

$$\int \frac{\sin^{\frac{1}{2}} x}{\cos x} dx \quad .24$$

$$\int \frac{dx}{\sin x (\frac{1}{2} + \cos x - \frac{1}{2} \sin x)} \quad .25$$

$$\int \frac{dx}{\sin x (\frac{1}{2} \cos^2 x - \frac{1}{2})} \quad .26$$

$$\int \frac{\sin^2 x \cos x}{\sin x + \cos x} dx \quad .27$$

$$\int \sin^2 x \sqrt{\cos x} dx \quad .28$$

$$\int \frac{dx}{\sqrt{\tan x}} \quad .29$$

$$\int \sin^2 x \sin^2 x dx \quad .30$$

$$\int \frac{dx}{(\frac{1}{2} - \sin x)(\frac{1}{2} + \sin x)} \quad .31$$

$$\int \frac{\frac{1}{2} - \sin x + \cos x}{\frac{1}{2} + \sin x - \cos x} dx \quad .32$$

$$\int \frac{(x^2 - 1) dx}{(x^2 + \frac{1}{2} x^2 + 1) \arctan(\frac{x^2 + 1}{x})} \quad .33$$

$$\int \frac{x \arctan x dx}{\sqrt{1 + x^2}} \quad .34$$

$$\int \frac{x dx}{\cos^2 x} \quad .35$$

$$\int \frac{dx}{(\frac{1}{2} + \cos x)(\frac{1}{2} + \cos x)} \quad .36$$

$$\int \frac{\sec^2 x}{\sqrt{\tan^2 x + \frac{1}{2} \tan x + \frac{1}{2}}} dx \quad .37$$

تمرینات تکمیلی انتگرال

$$\int \frac{dx}{(x^2+4x)\sqrt{4-x^2}} \quad .38$$

$$\int \frac{dx}{(x+1)^2\sqrt{x^2+2x+2}} \quad .39$$

$$\int x^2\sqrt{x^2-1} \, dx \quad .40$$