

11. INTEGRIRANJE TRIGONOMETRIJSKIH FUNKCIJA

11.1. Izračunajte neodređene integrale:

(a) $\int \cos^5 x \, dx$

(b) $\int \sin^4 x \, dx$

(c) $\int \frac{dx}{\sin^4 x \cos^4 x}$

(d) $\int \cos x \cos 2x \cos 5x \, dx$

(e) $\int \frac{\cos^3 x + \cos^5 x}{\sin^2 x + \sin^4 x} \, dx$

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

(g) $\int \frac{dx}{2 \sin x - \cos x + 5}$

(h) $\int \sin^{10} x \cos^3 x \, dx$

11.2. Izračunajte neodređene integrale:

$$(a) \int \frac{dx}{\sin^2 x \cos^4 x}$$

$$(b) \int \sin 3x \cos 5x \, dx$$

$$(c) \int \frac{dx}{\sin x (2 + \cos x - 2 \sin x)}$$

$$(d) \int \frac{\sin x + \sin^3 x}{\cos 2x} \, dx$$

$$(e) \int \frac{\cos^3 x}{\sin^2 x + \sin x} \, dx$$

$$(f) \int \frac{dx}{\sin^2 x + 2 \cos^2 x}$$

$$(g) \int \sin^4 3x \cos^2 3x \, dx$$

- 11.1. (a) $\sin x - \frac{2}{3} \sin^3 x + \frac{1}{5} \sin^5 x + c$
- (b) $\frac{3}{8}x - \frac{1}{4} \sin 2x + \frac{1}{32} \sin 4x + c$
- (c) $-\frac{1}{3} \operatorname{ctg}^3 x - 3 \operatorname{ctg} x + 3 \operatorname{tg} x + \frac{1}{3} \operatorname{tg}^3 x + c$
- (d) $\frac{1}{8} \sin 2x + \frac{1}{16} \sin 4x + \frac{1}{24} \sin 6x + \frac{1}{32} \sin 8x + c$
- (e) $\sin x - \frac{2}{\sin x} - 6 \operatorname{arctg}(\sin x) + c$
- (f) $\frac{1}{\sqrt{2}} \ln \left| \frac{1 + \sqrt{2} \cos x}{1 - \sqrt{2} \cos x} \right| - \frac{1}{2} \ln \left| \frac{1 + \cos x}{1 - \cos x} \right| + c$
- (g) $\frac{1}{\sqrt{5}} \operatorname{arctg} \frac{3 \operatorname{tg} \frac{x}{2} + 1}{\sqrt{5}} + c$
- (h) $\frac{1}{11} \sin^{11} x - \frac{1}{13} \sin^{13} x + c$

- 11.2. (a) $-\operatorname{ctg} x + 2 \operatorname{tg} x + \frac{1}{3} \operatorname{tg}^3 x + c$
- (b) $\frac{1}{4} \cos 2x - \frac{1}{16} \cos 8x + c$
- (c) $\frac{1}{3} \ln \left| \operatorname{tg} \frac{x}{2} \right| - \ln \left| \operatorname{tg} \frac{x}{2} - 1 \right| + \frac{5}{3} \ln \left| \operatorname{tg} \frac{x}{2} - 3 \right| + c$
- (d) $\frac{1}{2} \cos x - \frac{3\sqrt{2}}{8} \ln \left| \frac{\sqrt{2} \cos x - 1}{\sqrt{2} \cos x + 1} \right| + c$
- (e) $\ln |\sin x| - \sin x + c$
- (f) $\frac{1}{\sqrt{2}} \operatorname{arctg} \left(\frac{\operatorname{tg} x}{\sqrt{2}} \right) + c$
- (g) $\frac{1}{16} x - \frac{1}{192} \sin 6x - \frac{1}{192} \sin 12x + \frac{1}{576} \sin 18x + c$