NEDOLOČENI INTEGRAL

1. Izračunaj:

   a) $\int \left(1-\frac{1}{x^2}\right)\sqrt{x\sqrt{x}}\,dx$ b) $\int \frac{x^2}{x^2+1}\,dx$ c) $\int \frac{2^x}{3^{x-1}}\,dx$

   d) $\int \frac{\cos(2x)}{\cos^2 x \sin^2 x}\,dx$ e) $\int \operatorname{ctg}^2 x\,dx$ f) $\int \frac{dx}{\sqrt{2-3x^2}}\,.$

2. S pomočjo uvedbe nove spremenljivke izračunaj:

   a) $\int x\sqrt[3]{x-2}\,dx$ b) $\int \frac{x^2}{(x-1)^{100}}\,dx$ c) $\int x\cos(ax^2)\,dx$

   d) $\int \frac{2\ln x}{x}\,dx$ e) $\int \operatorname{tg} x\,dx$ f) $\int \frac{\cos^3 x}{\sin x}\,dx$

   g) $\int \frac{x}{1+x^4}\,dx$ h) $\int \frac{dx}{(x^2+a^2)^2}$ *Namig* : $x = a\operatorname{tg} t\,.$

3. S pomočjo integracije po delih izračunaj:

   a) $\int x^n \ln x\,dx$ b) $\int x^2 \arccos x\,dx$ c) $\int x\ln(x^2-1)\,dx$

   d) $\int \frac{\operatorname{arc\,tg} e^x}{e^x}\,dx$ e) $\int \sin(\ln x)\,dx$ f) $\int e^{ax}\cos(bx)\,dx\,.$

4. Izračunaj integrale racionalnih funkcij:

a) $\int \frac{2x+3}{x^3+x^2-2x}\,dx$ b) $\int \frac{x+1}{x(x-1)^3}\,dx$ c) $\int \frac{x^2}{(1-x^2)(1+x^2)}\,dx$

d) $\int \frac{x^3+1}{x(x^2+x+1)^2}\,dx$ e) $\int \frac{dx}{(x+1)^2(x^2+1)^2}$ f) $\int \frac{x^5}{x^6+9x^3+8}\,dx\,.$

5. Izračunaj:

a) $\int \frac{x-\sqrt[3]{x^2}-\sqrt[3]{x}+1}{(\sqrt{x}+\sqrt[3]{x})^2}\,dx$ b) $\int \frac{1}{1+x}\sqrt{\frac{1-x}{1+x}}\,dx$

c) $\int x^3\sqrt{\frac{1+x^2}{1-x^2}}\,dx$ d) $\int \frac{dx}{\sqrt{4x^2+4x-3}}$

e) $\int \frac{4x^4}{\sqrt{x^2+2}}$ f) $\int \sqrt{2+x-x^2}\,dx\,.$

6. Izračunaj:

a) $\int \cos^5 x\,dx$ b) $\int \sin^2 x\cos^4 x\,dx$ c) $\int \cos x\cos(2x)\cos(3x)\,dx$

d) $\int \frac{dx}{\sin^6 x}$ e) $\int \frac{dx}{2\sin^2 x+5\cos^2 x}$ f) $\int \frac{dx}{\sin x\cos x}$

g) $\int \frac{dx}{\sin x}$ h) $\int \frac{dx}{2\sin x-3\cos x+3}\,.$