

Zadaci za vežbu (integrali)

Neodređeni integral

1. Izračunati:

a) $\int (2x + e^x + \sin x) dx$	f) $\int \left(\frac{1}{x} + \frac{1}{x^2} + \frac{1}{1+x^2}\right) dx$	k) $\int \frac{(x+1)^2}{x^2} dx$
b) $\int \left(\frac{3}{x} + \sqrt{x} + \frac{1}{1+x^2}\right) dx$	g) $\int (\sqrt{x} + \sqrt[3]{x} + \sqrt[4]{x}) dx$	l) $\int \frac{2x^2}{x^2+1} dx$
c) $\int (6x + x^6 - 6) dx$	h) $\int \left(\frac{1}{\sqrt{1-x^2}} + \frac{1}{\sqrt{x}} + \frac{2}{\sqrt[3]{x}}\right) dx$	m) $\int \frac{2x^2+4}{x^2+1} dx$
d) $\int \frac{5}{\cos^2 x} dx$	i) $\int \frac{x^2 - x^3 e^x}{x^3} dx$	n) $\int \frac{x^3 + x + 1}{x^2 + 1} dx$
e) $\int \left(5 \cos x + \frac{1}{3} e^x - 2x^3 + \frac{4}{x} - \frac{23}{\sin^2 x}\right) dx$	j) $\int \frac{x^4 + 2x^3 + 7}{x^4} dx$	o) $\int \frac{\sin x - \sin^4 x}{\sin^3 x} dx$

2. Izračunati: (Smena promenljive)

a) $\int \cos(2x) dx$	g) $\int \frac{1}{\sqrt{1-2x}} dx$	m) $\int \frac{1}{25+x^2} dx$
b) $\int \sin(4x-3) dx$	h) $\int e^{5x-1} dx$	n) $\int \frac{1}{\sqrt{16-x^2}} dx$
c) $\int \frac{1}{(x+5)^3} dx$	i) $\int \frac{1}{7x+1} dx$	o) $\int \frac{2}{\sqrt{4-25x^2}} dx$
d) $\int \frac{5}{\sin^2(3x-5)} dx$	j) $\int (2x-3)^{20} dx$	p) $\int \frac{x}{x+4} dx$
e) $\int \sqrt{2x-1} dx$	k) $\int \frac{1}{\sqrt{1-9x^2}} dx$	q) $\int \frac{x-1}{x+3} dx$
f) $\int \sqrt[3]{3x+1} dx$	l) $\int \frac{1}{1+25x^2} dx$	r) $\int x(2x-3)^{15} dx$

3. Izračunati: (Smena promenljive)

a) $\int \frac{2x}{x^2+2} dx$	g) $\int \sqrt{x^2+6} x dx$	m) $\int e^x \sin e^x dx$
b) $\int \frac{2x-5}{x^2-5x+7} dx$	h) $\int \frac{\cos x}{\sin x} dx$	n) $\int \frac{e^x}{1+e^{2x}} dx$
c) $\int \frac{x^2}{x^3+1} dx$	i) $\int \frac{\cos x}{1+\sin x} dx$	o) $\int \frac{(\arctg x)^2}{1+x^2} dx$
d) $\int x e^{x^2} dx$	j) $\int \operatorname{tg} x dx$	p) $\int \frac{1}{(\arcsin x)^2 \sqrt{1-x^2}} dx$
e) $\int 6x^2 e^{x^3} dx$	k) $\int \frac{\sqrt{1+\ln x}}{x} dx$	q) $\int \frac{e^x}{e^{2x}+4} dx$
f) $\int \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$	l) $\int \frac{1}{x(1+\ln x)} dx$	r) $\int \frac{x^2}{x^6+4} dx$

4. Izračunati: (Parcijalna integracija)

- | | | |
|--------------------------------|---------------------------------|-----------------------------|
| a) $\int x e^x dx$ | f) $\int \arctg x dx$ | k) $\int (x-1) \cos x dx$ |
| b) $\int x^3 \ln x dx$ | g) $\int \frac{x}{\cos^2 x} dx$ | l) $\int (x^2+3) \sin x dx$ |
| c) $\int \frac{\ln x}{x^3} dx$ | h) $\int \ln(x^2+1) dx$ | m) $\int \ln(x+1) dx$ |
| d) $\int \arcsin x dx$ | i) $\int x^2 e^x dx$ | n) $\int x \sin(2x) dx$ |
| e) $\int x \arctg x dx$ | j) $\int \ln^2 x dx$ | o) $\int (x-1) e^{2x-1} dx$ |

5. Izračunati: (Razno)

- | | | |
|---|----------------------------------|---|
| a) $\int (x^2 + \sqrt{x} - \sqrt[3]{x}) dx$ | f) $\int 2x^2 e^{x^3-2} dx$ | k) $\int (x+1) e^{-x} dx$ |
| b) $\int (3x^2 - \frac{1}{3\sqrt{x}}) dx$ | g) $\int (2x-1) e^{x^2-x} dx$ | l) $\int x^2 \ln^2 x dx$ |
| c) $\int 4x \ln x dx$ | h) $\int \frac{1}{\sin^2 4x} dx$ | m) $\int \frac{\sin x}{\cos^2 x} dx$ |
| d) $\int \frac{2x-2}{x^2-2x+9} dx$ | i) $\int \frac{x}{\sin^2 4x} dx$ | n) $\int \frac{(1+x)^2}{x^2+1} dx$ |
| e) $\int \frac{\ln x}{x} dx$ | j) $\int x \sin(x^2-3) dx$ | o) $\int \frac{2x - \sqrt{\arcsin x}}{\sqrt{1-x^2}} dx$ |

Određeni integral

6. Izračunati:

- | | | |
|----------------------------------|--|---|
| a) $\int_1^2 \frac{1}{x+3} dx$ | c) $\int_1^2 \frac{1}{(2x-3)^{20}} dx$ | e) $\int_0^{\frac{\pi}{2}} x \cos x dx$ |
| b) $\int_1^e \frac{\ln x}{x} dx$ | d) $\int_0^1 \ln(x+1) dx$ | f) $\int_{\frac{1}{2}}^1 \arccos x dx$ |

7. Odrediti površinu ograničenu krivama:

- | | |
|--|--|
| a) $y = 4 - x^2$ i x -osom | f) $y = \ln x$, $x = 3$, $x = 5$, $y = 0$ |
| b) $y = x^2 - 3x + 2$ i $y = x^2 - 9$ | g) $y = \sin x$, $x = \pi$ i y -osom |
| c) $x = y^2 - 5y + 6$ i y -osom | h) $y = 4x - x^2$, $y = x^2 - 4x + 6$ |
| d) $y = x^2$, $y = x + 2$ | i) $x = 2 - y - y^2$, $x = 0$ |
| e) $y = e^x$, $x = 0$, $x = 1$ i x -osom | j) $x = y^2 - 1$, $x = 1 - y$ |