

Matematika I (KMD/MA1) - cvičení 12

FAKULTA STROJNÍ (akad. rok 2019/2020 a vyšší)

Příklad 1. Vypočítejte určité integrály:

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|---|----------------------------------|---|---|
| a) $\int_{-1}^3 (x^3 - 3x^2 + 1) dx$ | $[-4]$ | b) $\int_0^\pi 5 \sin(4x) dx$ | $[0]$ |
| c) $\int_0^3 e^{\frac{x}{3}} dx$ | $[3e - 3]$ | d) $\int_0^4 \frac{x-1}{x+1} dx$ | $[4 - 2 \ln 5]$ |
| e) $\int_{-\pi/4}^{\pi/4} 4 \sin^2 x dx$ | $[-2 + \pi]$ | f) $\int_{-2}^2 \frac{6}{8 + 3x^2} dx$ | $\left[\sqrt{6} \operatorname{arctg} \frac{\sqrt{6}}{2} \right]$ |
| g) $\int_1^4 3\sqrt{x} dx$ | $[14]$ | h) $\int_{-1/2}^{1/2} \operatorname{tg} x dx$ | $[0]$ |
| i) $\int_{-2}^2 \frac{x^2}{x^2 + 1} dx$ | $[4 - 2 \operatorname{arctg} 2]$ | j) $\int_0^3 x e^{-\frac{x}{2}} dx$ | $[-10e^{-3/2} + 4]$ |
| k) $\int_{-1}^1 4x \operatorname{arctg}(2x) dx$ | $[5 \operatorname{arctg} 2 - 2]$ | l) $\int_2^3 \frac{e^{\frac{1}{x}}}{x^2} dx$ | $[-\sqrt[3]{e} + \sqrt{e}]$ |
| m) $\int_0^\pi 3 \sin^3 x dx$ | $[4]$ | n) $\int_1^2 \frac{2(1 + \ln x)}{x} dx$ | $[\ln^2 2 + 2 \ln 2]$ |
| o) $\int_0^1 \frac{x}{\sqrt{4-x^2}} dx$ | $[2 - \sqrt{3}]$ | p) $\int_1^2 \frac{6}{6x-1} dx$ | $\left[\ln \frac{11}{5} \right]$ |
| q) $\int_{-1}^1 \frac{2}{\sqrt{16-4x^2}} dx$ | $\left[\frac{\pi}{3} \right]$ | r) $\int_0^{1/2} \frac{2(1+x^2)}{1-x^2} dx$ | $[-1 + 2 \ln 3]$ |
| s) $\int_0^2 \frac{1}{(5+4x)^3} dx$ | $\left[\frac{18}{4225} \right]$ | t) $\int_0^3 3\sqrt{x+1} dx$ | $[14]$ |
| u) $\int_{-1}^1 \frac{2}{x^2-4} dx$ | $[-\ln 3]$ | v) $\int_1^5 \frac{2 \ln x}{x} dx$ | $[\ln^2 5]$ |