Predmet: Mataliza 1
Ukol: 10.
Verze: 1.
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Prezdivka: DN

zadani

$\int_{-2}^{-1} \frac{1}{x^2}\ dx$

reseni

$\int \frac{1}{x^2}\ dx = -\frac{1}{x} + C$
horni mez: $x = -1 => -\frac{1}{-1} = 1$
spodni mez: $x = -2 => -\frac{1}{-2} = \frac{1}{2}$
$\underline{\underline{\int_{-2}^{-1} \frac{1}{x^2}\ dx = 1 - \frac{1}{2} = \frac{1}{2}}}$

zadani

$\int_0^{\pi/2} \sin x \cos x\ dx$

reseni

$\int \sin x \cos x\ dx$
$\begin{pmatrix} f = \sin x\ dx & df = \cos x \\ dg = \cos x & g = \sin x\ dx \end{pmatrix}$
$\sin^2 x - \int \sin x \cos x\ dx$
$\int \sin x \cos x\ dx = \frac{\sin^2 x}{2} + C$
horni mez: $x = \pi/2 => \frac{\sin^2 \pi/2}{2} = \frac{1}{2}$
spodni mez: $x = 0 => \frac{\sin^2 0}{2} = 0$
$\underline{\underline{\int_0^{\pi/2} \sin x \cos x\ dx = \frac{1}{2}}}$

zadani

$\int_1^e x^3 \ln x\ dx$

reseni

$\int x^3 \ln x\ dx$
$\begin{pmatrix} f = x^3 & df = 3x^2 \\ dg = \ln x & g = \frac{1}{x} \end{pmatrix}$
$\ln x \frac{x^4}{4} - \int \frac{x^3}{4}$
$\ln x \frac{x^4}{4} - \frac{1}{4}\frac{x^4}{4} + C$
$\int x^3 \ln x\ dx = \ln x \frac{x^4}{4} - \frac{x^4}{16} + C$
horni mez: $x = e => \ln e \frac{e^4}{4} - \frac{e^4}{16} = \frac{e^4}{4} - \frac{e^4}{16} = \frac{3e^4}{16}$
spodni mez: $x = 1 => \ln 1 \frac{1^4}{4} - \frac{1^4}{16} = -\frac{1}{16}$
$\underline{\underline{\int_1^e x^3 \ln x\ dx = \frac{3e^4}{16} + \frac{1}{16}}}$

zadani

$\int_0^1 3^x\ dx$

reseni

$\int 3^x = \frac{3^x}{\ln 3}$
horni mez: $x = 1 => \frac{3^1}{\ln 3} = \frac{3}{\ln 3}$
spodni mez: $x = 0 => \frac{3^0}{\ln 3} = \frac{1}{\ln 3}$
$\underline{\underline{\int_0^1 3^x \ dx = \frac{2}{\ln 3}}}$