Predmet: Mataliza 1
Ukol: 8.
Verze: 1.
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Prezdivka: DN

zadani

$\int \cot x \ dx$

reseni

$\int \frac{\cos x}{\sin x} \ dx =$
$\quad u = \sin x$
$\quad du = \cos x \ dx$
$\int \frac{du}{u} =$
$\ln |u| + c =$
$\underline{\underline{\ln |\sin x| + c}}$

zadani

$\int sin^3 x \ dx$

reseni

$\int (\sin^2 x)(\sin x) \ dx =$
$\int (1 - \cos^2 x)(sinx) \ dx$

$u = cosx$
$du = -\sin x \ dx$
$dx = \frac{du}{-sinx}$

$\int (1 - u^2) \sin x \frac{du}{-\sin x} =$
$-\int (1 - u^2) du =$
$-(u - \frac{u^3}{3}) + c =$
$\underline{\underline{-(\cos x - \frac{\cos^3 x}{3}) + c}}$

zadani

$\int x^2 e^{-x} \ dx$

reseni

$\int fg' = fg - \int gf'$
$\quad f = x^2 \ ; \ f' = 2x$
$\quad g' = e^{-x} \ ; \ g = -e^{-x}$
$x^2(-e^{-x}) - \int gf' =$
$x^2(-e^{-x}) - (\int -e^{-x}(2x)' \ dx) =$
$x^2(-e^{-x}) - (2xe^{-x} - \int (-e^{-x} * 2 \ dx)) =$
$x^2(-e^{-x}) - (2xe^{-x} - 2(-e^{-x})) =$
$\underline{\underline{-e^{-x}(x^2 + 2x + 2) + c}}$

zadani

$\int \sin^2 x \cos^2 x \ dx$

reseni

$\frac{1}{4}\int 4\sin^2 x\cos^2 x\ dx =$
$\frac{1}{4}\int \sin^2 2x\ dx =$
$\frac{1}{4}\int \frac{1-\cos 4x}{2}\ dx =$
$\frac{1}{4}\int \frac{1}{2} - \frac{1}{4}\int \frac{cos4x}{2}\ dx =$
$\underline{\underline{\frac{x}{8} - \frac{\sin 4x}{32}}}$