1 Całki nieoznaczone

Całkowanie przez części lub podstawienie
Obliczyć

$\int x\sin xdx = \sin x - x\cos x + c,$
$\int e^x \sin xdx = \frac{e^x}{2}(\sin x - \cos x) + c,$
$\int x^2 e^x dx = x^2e^x - 2xe^x + 2e^x + c,$
$\int \frac{x}{x^2+1}dx = \frac{1}{2}\ln\left(x^2+1\right) + c,$
$\int \frac{x^2}{1+x^2}dx = x - arctgx + c,$
$\int x^2\sqrt{4-x^3}dx = \sqrt{4-x^3}\left(\frac{2}{9}x^3 - \frac{8}{9}\right) + c,$
$\int \frac{x^3}{\sqrt{2+x^4}}dx = \frac{1}{\sqrt{x^4+2}}\left(\frac{1}{2}x^4+1\right) + c,$
$\int x\ln xdx = \frac{1}{2}x^2\ln x - \frac{1}{4}x^2 + c,$
$\int \arcsin xdx = x\arcsin x + \sqrt{(1-x^2)} + c,$
$\int arctgxdx = xarctgx - \frac{1}{2}\ln\left(x^2+1\right) + c,$
$\int \ln xdx = x\ln x - x + c,$
$\int xarctgxdx = \frac{1}{2}x^2 arctgx - \frac{1}{2}x + \frac{1}{2}arctgx + c,$
$\int \frac{\arctan x}{x^2+1}dx = \frac{1}{2}\arctan^2 x + c,$
$\int \frac{\ln x}{x}dx = \frac{1}{2}\ln^2 x + c,$
$\int \frac{\arcsin x}{\sqrt{1-x^2}}dx = \frac{1}{2}\arcsin^2 x + c,$
$\int \sin^5 x\cos xdx$
$\int e^{-2x}\cos 3xdx = -\frac{2}{13}e^{-2x}\cos 3x + \frac{3}{13}e^{-2x}\sin 3x + c,$
$\int (\arcsin x)^2 dx = x\arcsin^2 x - 2x + 2(\arcsin x)\sqrt{1-x^2} + c,$
$\int \frac{xdx}{\sin^2 3x} = -\frac{1}{9}\frac{3x\cos 3x - \ln(\sin 3x)\sin 3x}{\sin 3x} + c,$
$\int \sin\ln xdx = \frac{1}{2}x\sin(\ln x) - \frac{1}{2}x\cos(\ln x) + c,$

Całki z funkcji wymiernych
Obliczyć

$\int \frac{3x-2}{x^2+5x+7}dx = \frac{3}{2}\ln\left(x^2+5x+7\right) - \frac{19}{3}\sqrt{3}\arctan\frac{1}{3}(2x+5)\sqrt{3} + c,$
$\int \frac{dx}{x^2-4} = \frac{1}{4}\ln(x-2) - \frac{1}{4}\ln(x+2) + c,$
$\int \frac{dx}{(x-1)(x+2)} = \frac{1}{3}\ln(x-1) - \frac{1}{3}\ln(x+2) + c,$
$\int \frac{2x+1}{x^2+2x+6}dx = \ln\left(x^2+2x+6\right) - \frac{1}{5}\sqrt{5}\arctan\frac{1}{5}(x+1)\sqrt{5}$
$\int \frac{dx}{(x+1)(x-2)} = -\frac{1}{3}\ln(x+1) + \frac{1}{3}\ln(x-2) + c,$
$\int \frac{xdx}{x^2-7x+10} = -\frac{2}{3}\ln(x-2) + \frac{5}{3}\ln(x-5) + c,$
$\int \frac{dx}{x^3+2x^2-x-2} = \frac{1}{6}\ln(x-1) + \frac{1}{3}\ln(x+2) - \frac{1}{2}\ln(x+1) + c,$
$\int \frac{2x-7}{(x-2)(3-x)}dx = -3\ln(x-2) + \ln(-3+x) + c,$
$\int \frac{2x^2-2x}{x^3+8}dx = \ln(x+2) + \frac{1}{2}\ln\left(x^2-2x+4\right) - \frac{1}{3}\sqrt{3}\arctan\frac{1}{3}(x-1)\sqrt{3}$

Całki z funkcji niewymiernych
Obliczyć

$\int \frac{x}{\sqrt{x^2+7x-1}}dx = \sqrt{(x^2+7x-1)} + \frac{7}{2}\ln 2 - \frac{7}{2}\ln\left(2x+7+2\sqrt{(x^2+7x-1)}\right) + c,$
$\int \frac{2x-1}{\sqrt{x^2+4x-1}}dx = 2\sqrt{(x^2+4x-1)} - 5\ln\left(x+2+\sqrt{(x^2+4x-1)}\right) + c,$
$\int \frac{x+3}{\sqrt{4x-x^2}}dx = -5\arcsin\left(1-\frac{1}{2}x\right) - \sqrt{x(4-x)} + c,$
$\int \frac{x-1}{\sqrt{4x-x^2+5}}dx = -\sqrt{4x-x^2+5} - \arcsin\left(\frac{2}{3}-\frac{1}{3}x\right) + c,$
$\int \frac{x+1}{\sqrt{x^2-4x+6}}dx =: \sqrt{x^2-4x+6} + 3\ln\left(\frac{1}{4}\sqrt{2}(2x-4) + \sqrt{\frac{1}{2}x^2-2x+3}\right) + c,$

Całka z funkcji trygonometrycznych
Obliczyć

$\int \frac{dx}{\sin x} = \ln(\sin x) - \ln(\cos x+1)$
$\int \frac{2-\sin x}{2+\cos x} =$
$\int \frac{\sin x+2}{1+\cos x}dx = -\frac{-2+2\cos x-\ln 2\sin x+\ln(\cos x+1)\sin x}{\sin x}$
$\int \frac{xdx}{\cos^2 2x} = \frac{1}{4}\frac{2x\sin 2x+\ln(\cos 2x)\cos 2x}{\cos 2x}$
$\int \frac{\sin x\cos x}{\sqrt{-\sin^2 x+2\sin x+6}}dx = -\sqrt{(2\sin x+5+\cos^2 x)} + \arcsin\left(\frac{1}{7}\sqrt{7}\sin x - \frac{1}{7}\sqrt{7}\right)$
$\int \frac{dx}{2+3\cos^2 x} =$
$\int \frac{\cos x\sin x}{\sqrt{-\cos^2 x+2\cos x+5}}dx = \sqrt{(-\cos^2 x+2\cos x+5)} - \arcsin\left(\frac{1}{6}\sqrt{6}\cos x - \frac{1}{6}\sqrt{6}\right),$
$\int \frac{dx}{2+\cos x} =$
$\int \frac{\sin x\cos x}{\sqrt{\cos^2 x-\cos x+5}}dx = -\sqrt{(\cos^2 x-\cos x+5)} - \frac{1}{2}arcsinh\left(\frac{2}{19}\sqrt{19}\cos x - \frac{1}{19}\sqrt{19}\right)$
$\int tgxdx = -\ln(\cos x),$
$\int \frac{\sin^2 x}{\cos x}dx = -\sin x + \ln(1+\sin x) - \ln(\cos x),$
$\int \frac{2\sin x\cos x}{2\sqrt{\cos^2 x+2\sin x+5}}dx$