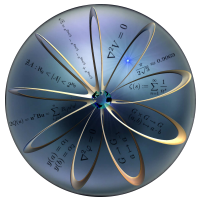

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table of integrals

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Below are some tables of some real-valued functions and their corresponding indefinite integrals.

http://planetmath.org/Polynomial**Polynomials and powers**

$f(x)$	$\int f(x)\,dx$	derivation
x^n for $n \neq -1$	$\frac{x^{n+1}}{n+1} + C$	http://planetmath.org/DerivativeOfXnhere
x^{-1}	$\ln \lvert x \rvert + C$	
$\lvert x \rvert^n$ for $n \neq -1$	$\frac{x\lvert x \rvert^n}{n+1} + C$	
$\lvert x \rvert^{-1}$	$\frac{x \ln \lvert x \rvert}{\lvert x \rvert} + C$	

Exponential and logarithmic functions

$f(x)$	$\int f(x)\,dx$	derivation
e^x	$e^x + C$	
e^{kx} for $k \neq 0$	$\frac{e^{kx}}{k} + C$	
a^x for $a > 0$	$\frac{a^x}{\ln a} + C$	
$\ln x$	$x \ln x - x + C$	http://planetmath.org/ASpecialCaseOfPartialIr
$(\ln x)^2$	$x[(\ln x)^2 - 2 \ln x + 2] + C$	http://planetmath.org/ASpecialCaseOfPartialIr
$\frac{1}{\ln x}$	$\operatorname{Li} x + C$	Li
$\ln(\ln x)$	$x \ln \ln x - \operatorname{Li} x + C$	http://planetmath.org/ASpecialCaseOfPartialIr

http://planetmath.org/Trigonometry**Trigonometric functions**

$f(x)$	$\int f(x)\,dx$	derivation
$\cos x$	$\sin x + C$	
$\sin x$	$-\cos x + C$	http://planetmath.org/DerivativesOfSinX
$\cot x$	$\ln\lvert\sin x\rvert + C$	
$\tan x$	$-\ln\lvert\cos x\rvert + C$	
$\sec x$	$\ln\lvert\sec x + \tan x\rvert + C$	
$\csc x$	$-\ln\lvert\csc x + \cot x\rvert + C$	http://planetmath.org/IntegrationOfRationalFuncti
$\dfrac{1}{\sin x}$	$\ln\left\lvert\tan\dfrac{x}{2}\right\rvert + C$	http://planetmath.org/IntegrationOfRationalFuncti
$\sec^2 x$	$\tan x + C$	
$\csc^2 x$	$-\cot x + C$	
$\sec x \tan x$	$\sec x + C$	
$\csc x \cot x$	$-\csc x + C$	
$\dfrac{1}{1+x^2}$	$\arctan x + C$	http://planetmath.org/DerivativeOfInverse
$\dfrac{1}{\sqrt{1-x^2}}$	$\arcsin x + C$	http://planetmath.org/DerivativeOfInverse

http://planetmath.org/HyperbolicFunctions**Hyperbolic functions**

$f(x)$	$\int f(x)\,dx$	derivation
$\cosh x$	$\sinh x + C$	http://planetmath.org/DerivativesOfHyperbolicFunctionsl
$\sinh x$	$\cosh x + C$	http://planetmath.org/DerivativesOfHyperbolicFunctionsl
$\tanh x$	$\ln(\cosh x) + C$	
$\coth x$	$\ln\lvert\sinh x\rvert + C$	
$\operatorname{sech}^2 x$	$\tanh x + C$	
$\operatorname{csch}^2 x$	$-\coth x + C$	
$\operatorname{sech} x \tanh x$	$-\operatorname{sech} x + C$	
$\operatorname{csch} x \coth x$	$-\operatorname{csch} x + C$	

http://planetmath.org/CyclometricFunctions**Cyclometric functions**

$f(x)$	$\int f(x)\,dx$	derivation
$\arccos x$	$x \arccos x - \sqrt{1-x^2} + C$	
$\arcsin x$	$x \arcsin x + \sqrt{1-x^2} + C$	http://planetmath.org/ASpecialCaseOfPartial
$\operatorname{arccot} x$	$x \operatorname{arccot} x + \ln\sqrt{1+x^2} + C$	
$\arctan x$	$x \arctan x - \ln\sqrt{1+x^2} + C$	http://planetmath.org/ASpecialCaseOfPartial
$\operatorname{arcsec} x$	$x \operatorname{arcsec} x - \ln(x + \sqrt{x^2-1}) + C$	

Some http://planetmath.org/SquareRoot**square roots**

$f(x)$	$\int f(x)\,dx$	derivation
$\sqrt{x}$	$\frac{2}{3}x\sqrt{x}+C$	http://planetmath.org/DerivativeOfXnh
$\sqrt{x^2+1}$	$\frac{x}{2}\sqrt{x^2+1}+\frac{1}{2}\operatorname{arsinh}x+C$	http://planetmath.org/IntegrationOfSqrtx
$\sqrt{x^2-1}$	$\frac{x}{2}\sqrt{x^2-1}-\frac{1}{2}\operatorname{arcosh}x+C$	http://planetmath.org/IntegrationOfSqrtx
$\frac{1}{\sqrt{x^2+1}}$	$\operatorname{arsinh}x+C$	http://planetmath.org/EulersSubstitutionsForInt
$\frac{1}{\sqrt{x^2-1}}$	$\operatorname{arcosh}x+C\ \ (x>1)$	http://planetmath.org/EulersSubstitutionsForInt

Remark 1. C above denotes an arbitrary constant real number; Li is the logarithmic integral.

Remark 2. The antiderivatives may be proven by differentiation; in some cases there are also given a link to a derivation.

Remark 3. Note that the table can only be used to compute a definite integral when the integrand is continuous on the domain of integration. For example, note the following erroneous calculation:

$$\int_{-1}^{1}|x|^{-1}\,dx=\frac{x\ln|x|}{|x|}\Big|_{-1}^{1}=\frac{1\ln|1|}{|1|}-\frac{-1\ln|-1|}{|-1|}=0-0=0$$

The above calculation is incorrect since $|x|^{-1}$ is not continuous at $x=0$.

Instructions on how to add a function and its integral. Open the entry in edit mode. Using the appropriate table for your function (or make a new table if applicable), make a copy of the two lines of comment (starting with %) in the code (within the tabular environment) and paste it immediately before the comment. Uncomment the lines (take out the % symbols) after completing. Preview before saving the entry.