Integration af $f(x) = \frac{1}{x}$

$$\int \frac{1}{x}\, dx = F(x)$$

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Undersøg om

$$F(x) = \ln(x) + C$$

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f	f'	
k	0	(1)
x^a	ax^{a-1}	(2)
$e^{k\cdot x}$	$k \cdot e^{k\cdot x}$	(3)
$\ln(x)$	$\frac{1}{x}$	(4)
a^x	$\ln(a) \cdot a^x$	(5)

f	f'	
$g + h$	$g' + h'$	(6)
$k \cdot g(x)$	$k \cdot g'(x)$	(7)
$g \cdot h$	$g' \cdot h + g \cdot h'$	(8)
$g(h(x))$	$g'(h(x)) \cdot h'(x)$	(9)

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$$(\ln(x) + C)' = \frac{1}{x} + 0$$

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$$\begin{aligned}(\ln(x) + C)' &= \frac{1}{x} + 0 \\ &= \frac{1}{x}\end{aligned}$$

Integration af $f(x) = \frac{1}{x}$

Regneregler for integration		
f	F	
x^n	$\frac{1}{n+1}x^{(n+1)} + C \quad , n \neq -1$	(1)
$\sqrt{x}$	$\frac{2}{3}x^{3/2} + C$	(2)
$\frac{1}{x}$	$\ln(x) + C \quad , x > 0$	(3)

Integration af $f(x) = \frac{1}{x}$

Eksempel 1

$$\int x^{-1}\,dx$$

Regneregler for integration

f	F	
x^n	$\frac{1}{n+1}x^{(n+1)} + C \quad , n \neq -1$	(1)
$\sqrt{x}$	$\frac{2}{3}x^{3/2} + C$	(2)
$\frac{1}{x}$	$\ln(x) + C \quad , x > 0$	(3)

Integration af $f(x) = \frac{1}{x}$

Eksempel 1

$$\int x^{-1}\,dx \;=\; \ln(x) + C$$

Regneregler for integration

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