Derivasjonsregler

Funksjon	Den deriverte
$f(t) = \sin(\omega \cdot t)$	$\frac{df(t)}{dt} = \omega \cdot \cos(\omega \cdot t)$
$f(t) = \cos(\omega \cdot t)$	$\frac{df(t)}{dt} = -\omega \cdot \sin(\omega \cdot t)$
$f(x) = a^x$	$\frac{df(x)}{dx} = a^x \cdot \ln a$
$f(x) = e^x$	$\frac{df(x)}{dx} = e^x$
$f(x) = e^{ax}$	$\frac{df(x)}{dx} = ae^{ax}$
$f(x) = xe^{ax}$	$\frac{df(x)}{dx} = x \cdot ae^{ax} + e^{ax}$
$f(x) = x^n$	$\frac{df(x)}{dx} = n \cdot x^{n-1}$
$f(x) = \ln x$	$\frac{df(x)}{dx} = \frac{1}{x}$
$f(x) = \log_g x = \frac{\ln x}{\ln g}$	$\frac{df(x)}{dx} = \frac{1}{x}\log_g e = \frac{1}{x \cdot \ln g}$

Integrasjonsregler

Funksjon	Den integrerte
$f(t) = \sin(\omega \cdot t)$	$\int f(t)dt = -\frac{1}{\omega}\cos(\omega \cdot t) + C$
$f(t) = \cos(\omega \cdot t)$	$\int f(t)dt = \frac{1}{\omega}\sin(\omega \cdot t) + C$
$f(x) = a$	$\int f(x)dx = ax + C$
$f(x) = \frac{1}{ax+b}$ ($ax+b > 0$)	$\int f(x)dx = \frac{1}{a}\ln(ax+b) + C$
$f(x) = a^x$	$\int f(x)dx = \frac{a^x}{\ln a} + C$
$f(x) = \frac{1}{x}$ ($x > 0$)	$\int f(x)dx = \ln x + C$
$f(x) = e^{ax}$	$\int f(x)dx = \frac{e^{ax}}{a} + C$
$f(x) = x \cdot e^{ax}$	$\int f(x)dx = \frac{e^{ax}}{a}(x - \frac{1}{a}) + C$
$f(x) = x^n$	$\int f(x)dx = \frac{x^{n+1}}{n+1} + C$
$f(x) = \ln x$ ($x > 0$)	$\int f(x)dx = x \cdot \ln x - x + C$
$f(x) = \log_g x = \frac{\ln x}{\ln g}$ ($x > 0$)	$\int f(x)dx = x \cdot \log_g x - \frac{x}{\ln g} + C$ som er lik: $\int f(x)dx = \frac{1}{\ln g}[x \cdot \ln x - x] + C$

C = konstant

Eulers formel

$$\cos\alpha = \frac{1}{2}\left(e^{j\alpha} + e^{-j\alpha}\right) \qquad \sin\alpha = \frac{1}{2j}\left(e^{j\alpha} - e^{-j\alpha}\right)$$

$$e^{j\alpha} = \cos\alpha + j\sin\alpha \qquad e^{-j\alpha} = \cos\alpha - j\sin\alpha$$

$$x(t) = A\cos(\omega \cdot t) = \frac{A}{2}e^{j\omega t} + \frac{A}{2}e^{-j\omega t}$$ der $\alpha = \omega \cdot t$