Formelblad

Trigonometriska formler

$$\sin(x+y) = \sin x \cos y + \cos x \sin y \qquad \sin 2x = 2\sin x \cos x$$

$$\cos(x+y) = \cos x \cos y - \sin x \sin y \qquad \cos 2x = \cos^2 x - \sin^2 x$$

$$\tan(x+y) = \frac{\tan x + \tan y}{1 - \tan x \tan y} \qquad \tan 2x = \frac{2\tan x}{1 - \tan^2 x}$$

$$\sin^2 x = \frac{1-\cos 2x}{2} \qquad \cos^2 x = \frac{1+\cos 2x}{2}$$

Integralkatalog (Integrationskonstanterna utelämnade.)

$$\int x^a\,dx = \frac{x^{a+1}}{a+1},\ \text{om } a \neq -1 \qquad \int a^x\,dx = \frac{a^x}{\ln a}$$

$$\int \frac{1}{x}\,dx = \ln|x| \qquad \int \frac{f'(x)}{f(x)}\,dx = \ln|f(x)|$$

$$\int \sin x\,dx = -\cos x \qquad \int \cos x\,dx = \sin x$$

$$\int \frac{1}{\cos^2 x}\,dx = \tan x \qquad \int \frac{1}{\sin^2 x}\,dx = -\cot x$$

$$\int \frac{1}{x^2+a}\,dx = \frac{1}{\sqrt{a}} \cdot \arctan\frac{x}{\sqrt{a}}\ \text{om } a > 0 \qquad \int \frac{1}{x^2-a}\,dx = \frac{1}{2\sqrt{a}} \cdot \ln\left|\frac{x-\sqrt{a}}{x+\sqrt{a}}\right|\ \text{om } a > 0$$

$$\int \frac{1}{\sqrt{a-x^2}}\,dx = \arcsin\frac{x}{\sqrt{a}}\ \text{om } a > 0 \qquad \int \frac{1}{\sqrt{x^2+a}}\,dx = \ln\left|x + \sqrt{x^2+a}\right|$$

$$\int \sqrt{x^2+a}\,dx = \frac{1}{2} \cdot \left(x\sqrt{x^2+a} + a\ln\left|x + \sqrt{x^2+a}\right|\right)$$

Maclaurinutvecklingar

$$e^x = 1 + x + \frac{x^2}{2} + \ldots + \frac{x^n}{n!} + x^{n+1}B(x)$$

$$\ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} + \ldots + (-1)^{n-1} \cdot \frac{x^n}{n} + x^{n+1}B(x)$$

$$(1+x)^a = 1 + ax + \frac{a(a-1)}{2} \cdot x^2 + \ldots + \frac{a(a-1)\ldots(a-n+1)}{n!} \cdot x^n + x^{n+1}B(x)$$

$$\sin x = x - \frac{x^3}{6} + \frac{x^5}{120} + \ldots + (-1)^{n-1} \cdot \frac{x^{2n-1}}{(2n-1)!} + x^{2n+1}B(x)$$

$$\cos x = 1 - \frac{x^2}{2} + \frac{x^4}{24} + \ldots + (-1)^n \cdot \frac{x^{2n}}{(2n)!} + x^{2n+2}B(x)$$

$$\arctan x = x - \frac{x^3}{3} + \frac{x^5}{5} + \ldots + (-1)^{n-1} \cdot \frac{x^{2n-1}}{2n-1} + x^{2n+1}B(x)$$