Algebra valemid

$$(a \pm b)^2 = a^2 \pm 2ab + b^2$$

$$(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2ac + 2bc$$

$$(a \pm b)^3 = a^3 \pm 3a^2 b + 3ab^2 \pm b^3$$

$$a^2 - b^2 = (a - b)(a + b)$$

$$a^3 \pm b^3 = (a \pm b)(a^2 \mp ab + b^2)$$

$$a^m a^n = a^{m+n} \qquad a^n b^n = (ab)^n$$

$$\frac{a^m}{a^n} = a^{m-n} \qquad \frac{1}{a^n} = a^{-n}$$

$$\sqrt[n]{a^m} = a^{\frac{m}{n}}$$

$$\log_a b = \frac{\log_c b}{\log_c a} \qquad \log_a b = \frac{1}{\log_b a}$$

Hüperboolse trigonomeetria valemid

$$\operatorname{sh}\alpha = \frac{e^{\alpha} - e^{-\alpha}}{2} \qquad \operatorname{arsh} x = \ln(x + \sqrt{x^2 + 1})$$

$$\operatorname{ch}\alpha = \frac{e^{\alpha} + e^{-\alpha}}{2} \qquad \operatorname{arch} x = \ln(x + \sqrt{x+1}\sqrt{x-1})$$

$$\operatorname{th}\alpha = \frac{e^{\alpha} - e^{-\alpha}}{e^{\alpha} + e^{-\alpha}} \qquad \operatorname{arth} x = \frac{1}{2}\ln\left(\frac{1+x}{1-x}\right)$$

$$\operatorname{ch}^2\alpha - \operatorname{sh}^2\alpha = 1 \qquad \operatorname{th}\alpha \operatorname{cth}\alpha = 1$$

$$\operatorname{sh}(\alpha \pm \beta) = \operatorname{sh}\alpha \operatorname{ch}\beta \pm \operatorname{ch}\alpha \operatorname{sh}\beta$$

$$\operatorname{ch}(\alpha \pm \beta) = \operatorname{ch}\alpha \operatorname{ch}\beta \pm \operatorname{sh}\alpha \operatorname{sh}\beta$$

$$\operatorname{sh}(2\alpha) = 2\operatorname{sh}\alpha \operatorname{ch}\alpha \qquad 2\operatorname{sh}^2\alpha = \operatorname{ch}2\alpha - 1$$

$$\operatorname{ch}(2\alpha) = \operatorname{sh}^2\alpha + \operatorname{ch}^2\alpha \qquad 2\operatorname{ch}^2\alpha = \operatorname{ch}2\alpha + 1$$

$$2\operatorname{sh}\alpha \operatorname{sh}\beta = \operatorname{ch}(\alpha + \beta) - \operatorname{ch}(\alpha - \beta)$$

$$2\operatorname{ch}\alpha \operatorname{ch}\beta = \operatorname{ch}(\alpha + \beta) - \operatorname{ch}(\alpha - \beta)$$

$$2\operatorname{sh}\alpha \operatorname{ch}\beta = \operatorname{sh}(\alpha + \beta) + \operatorname{sh}(\alpha - \beta)$$

Trigonomeetria valemid

$$\sin^2\alpha+\cos^2\alpha=1 \qquad \tan\alpha\cot\alpha=1$$

$$\sin(\alpha\pm\beta)=\sin\alpha\cos\beta\pm\cos\alpha\sin\beta$$

$$\cos(\alpha\pm\beta)=\cos\alpha\cos\beta\mp\sin\alpha\sin\beta$$

$$\sin(2\alpha)=2\sin\alpha\cos\alpha \qquad 2\sin^2\alpha=1-\cos 2\alpha$$

$$\cos(2\alpha)=\cos^2\alpha-\sin^2\alpha \qquad 2\cos^2\alpha=1+\cos 2\alpha$$

$$\sin^{-2}\alpha=1+\cot^2\alpha \qquad 4\sin^3\alpha=3\sin\alpha-\sin 3\alpha$$

$$\cos^{-2}\alpha=1+\tan^2\alpha \qquad 4\cos^3\alpha=3\cos\alpha+\cos 3\alpha$$

$$2\sin\alpha\sin\beta=\cos(\alpha-\beta)-\cos(\alpha+\beta)$$

$$2\cos\alpha\cos\beta=\cos(\alpha-\beta)+\cos(\alpha+\beta)$$

$$2\sin\alpha\cos\beta=\sin(\alpha-\beta)+\sin(\alpha+\beta)$$

$$\sin\alpha+\sin\beta=2\sin\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$$

$$\sin\alpha-\sin\beta=2\cos\frac{\alpha+\beta}{2}\sin\frac{\alpha-\beta}{2}$$

$$\cos\alpha+\cos\beta=2\cos\frac{\alpha+\beta}{2}\cos\frac{\alpha-\beta}{2}$$

$$\cos\alpha-\cos\beta=-2\sin\frac{\alpha+\beta}{2}\sin\frac{\alpha-\beta}{2}$$

$$\sin\alpha=\cos\left(\frac{\pi}{2}-\alpha\right) \qquad \cos\alpha=\sin\left(\frac{\pi}{2}-\alpha\right)$$

$$\arcsin x+\arccos x=\frac{\pi}{2} \qquad \arctan x+\operatorname{arccot} x=\frac{\pi}{2}$$

$$\arcsin x=\arctan\frac{x}{\sqrt{1-x^2}} \qquad \arccos x=\operatorname{arccot}\frac{x}{\sqrt{1-x^2}}$$

$$\arctan x=\arcsin\frac{x}{\sqrt{1+x^2}} \qquad \operatorname{arccot} x=\arccos\frac{x}{\sqrt{1+x^2}}$$

Tuletise omadused

$(cu)' = cu'$ (c on konstant)

$(u \pm v)' = u' \pm v'$

$(uv)' = u'v + v'u$

$\left(\frac{u}{v}\right)' = \frac{u'v - uv'}{v^2}$

$(u(v(x)))' = u'(v(x))v'(x)$

Diferentseerimise valemid

$c' = 0$ (c on konstant)

$x' = 1$

$\left(\frac{1}{x}\right)' = -\frac{1}{x^2}$

$\left(\sqrt{x}\right)' = \frac{1}{2\sqrt{x}}$

$(x^a)' = ax^{a-1}$

$(a^x)' = a^x \ln a$

$(\mathrm{e}^x)' = \mathrm{e}^x$

$(\log_a |x|)' = \frac{1}{x \ln a}$

$(\ln |x|)' = \frac{1}{x}$

$(\sin x)' = \cos x$

$(\cos x)' = -\sin x$

$(\tan x)' = \frac{1}{\cos^2 x}$

$(\cot x)' = -\frac{1}{\sin^2 x}$

$(\arcsin x)' = \frac{1}{\sqrt{1-x^2}}$

$(\arccos x)' = -\frac{1}{\sqrt{1-x^2}}$

$(\arctan x)' = \frac{1}{1+x^2}$

$(\operatorname{arccot} x)' = -\frac{1}{1+x^2}$

$(\operatorname{sh} x)' = \operatorname{ch} x$

$(\operatorname{ch} x)' = \operatorname{sh} x$

$(\operatorname{th} x)' = \frac{1}{\operatorname{ch}^2 x}$

$(\operatorname{cth} x)' = -\frac{1}{\operatorname{sh}^2 x}$

$(\operatorname{arsh} x)' = \frac{1}{\sqrt{1+x^2}}$

$(\operatorname{arch} x)' = \frac{1}{\sqrt{x^2-1}}$

$(\operatorname{arth} x)' = \frac{1}{1-x^2}$

$(\operatorname{arcth} x)' = \frac{1}{1-x^2}$

Integraali omadused

$$\int c f(x)\,\mathrm{d}x = c\int f(x)\,\mathrm{d}x \quad (c \text{ on konstant})$$

$$\int \big(f(x) \pm g(x)\big)\,\mathrm{d}x = \int f(x)\,\mathrm{d}x \pm \int g(x)\,\mathrm{d}x$$

$$\int u\,\mathrm{d}v = uv - \int v\,\mathrm{d}u$$

Integreerimise valemid

$$\int 0\,\mathrm{d}x = C \qquad \int \mathrm{e}^x\,\mathrm{d}x = \mathrm{e}^x + C$$

$$\int \mathrm{d}x = x + C \qquad \int \frac{\mathrm{d}x}{x} = \ln|x| + C$$

$$\int \frac{\mathrm{d}x}{x^2} = -\frac{1}{x} + C \qquad \int \sin x\,\mathrm{d}x = -\cos x + C$$

$$\int \frac{\mathrm{d}x}{\sqrt{x}} = 2\sqrt{x} + C \qquad \int \cos x\,\mathrm{d}x = \sin x + C$$

$$\int x^a\,\mathrm{d}x = \frac{x^{a+1}}{a+1} + C \qquad \int \frac{\mathrm{d}x}{\sin^2 x} = -\cot x + C$$

$$\int a^x\,\mathrm{d}x = \frac{a^x}{\ln a} + C \qquad \int \frac{\mathrm{d}x}{\cos^2 x} = \tan x + C$$

$$\int \frac{\mathrm{d}x}{\sqrt{1-x^2}} = \arcsin x + C = -\arccos x + C$$

$$\int \frac{\mathrm{d}x}{1+x^2} = \arctan x + C = -\operatorname{arccot} x + C$$

$$\int \mathrm{sh}\,x\,\mathrm{d}x = \mathrm{ch}\,x + C \qquad \int \frac{\mathrm{d}x}{\mathrm{sh}^2 x} = -\mathrm{cth}\,x + C$$

$$\int \mathrm{ch}\,x\,\mathrm{d}x = \mathrm{sh}\,x + C \qquad \int \frac{\mathrm{d}x}{\mathrm{ch}^2 x} = \mathrm{th}\,x + C$$