Funktioner

sin	o/h	$\sin\theta = \cos\left(\frac{\pi}{2} - \theta\right) = \frac{1}{\csc\theta}$
cos	a/h	$\cos\theta = \sin\left(\frac{\pi}{2} - \theta\right) = \frac{1}{\sec\theta}$
tan	o/a	$\tan\theta = \frac{\sin\theta}{\cos\theta} = \cot\left(\frac{\pi}{2} - \theta\right) = \frac{1}{\cot\theta}$
cot	a/o	$\cot\theta = \frac{\cos\theta}{\sin\theta} = \tan\left(\frac{\pi}{2} - \theta\right) = \frac{1}{\tan\theta}$
sec	h/a	$\sec\theta = \csc\left(\frac{\pi}{2} - \theta\right) = \frac{1}{\cos\theta}$
csc	h/a	$\csc\theta = \sec\left(\frac{\pi}{2} - \theta\right) = \frac{1}{\sin\theta}$

Satser

Sinussatsen

$$\frac{\sin\alpha}{a} = \frac{\sin\beta}{b} = \frac{\sin\gamma}{c}$$

Cosinussatsen

$$a^2 = b^2 + c^2 - 2bc\cdot\cos(\alpha)$$
$$b^2 = a^2 + c^2 - 2ac\cdot\cos(\beta)$$
$$c^2 = a^2 + b^2 - 2ab\cdot\cos(\gamma)$$

Areasatsen

$$\frac{ab\sin\gamma}{2} = \frac{ac\sin\beta}{2} = \frac{bc\sin\gamma}{2}$$

Hjälpvinkelmetoden

$$a\sin x + b\cos x =$$
$$= \sqrt{a^2+b^2}\sin\left(x + \arcsin\left(\frac{b}{\sqrt{a^2+b^2}}\right)\right)$$
$$= \sqrt{a^2+b^2}\sin\left(x + \arccos\left(\frac{a}{\sqrt{a^2+b^2}}\right)\right)$$

Identiteter

$$(\sin x)^2 + (\cos x)^2 = 1$$
$$(\sec x)^2 - (\tan x)^2 = 1$$
$$(\csc x)^2 - (\cot x)^2 = 1$$

Vinklar

	0	$\frac{\pi}{12}$	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{5\pi}{12}$	$\frac{\pi}{2}$
sin	0	$\frac{\sqrt{6}-\sqrt{2}}{4}$	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{6}+\sqrt{2}}{4}$	1
cos	1	$\frac{\sqrt{6}+\sqrt{2}}{4}$	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	$\frac{\sqrt{6}-\sqrt{2}}{4}$	0
tan	0	$2-\sqrt{3}$	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	$2+\sqrt{3}$	∞
cot	∞	$2+\sqrt{3}$	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	$2-\sqrt{3}$	0
sec	1	$\sqrt{6}-\sqrt{2}$	$\frac{2\sqrt{3}}{3}$	$\sqrt{2}$	2	$\sqrt{6}+\sqrt{2}$	∞
csc	∞	$\sqrt{6}+\sqrt{2}$	2	$\sqrt{2}$	$\frac{2\sqrt{3}}{3}$	$\sqrt{6}-\sqrt{2}$	1

Vinkeltransformationer

Addition

$$\sin(\alpha\pm\beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta$$
$$\cos(\alpha\pm\beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta$$
$$\tan(\alpha\pm\beta) = \frac{\tan\alpha\pm\tan\beta}{1\mp\tan\alpha\tan\beta}$$

Halva vinkeln

$$\sin\frac{\theta}{2} = \pm\sqrt{\frac{1-\cos\theta}{2}} \qquad \cos\frac{\theta}{2} = \pm\sqrt{\frac{1+\cos\theta}{2}}$$

$$\tan\frac{\theta}{2} = \csc\theta - \cot\theta = \frac{\sin\theta}{1+\cos\theta} = \frac{1-\cos\theta}{\sin\theta}$$

Dubbla vinkeln

$$\sin 2\theta = 2\sin\theta\cos\theta$$
$$\cos 2\theta = (\cos\theta)^2 - (\sin\theta)^2$$
$$\tan 2\theta = \frac{2\tan\theta}{1-(\tan\theta)^2}$$

Trippla vinkeln

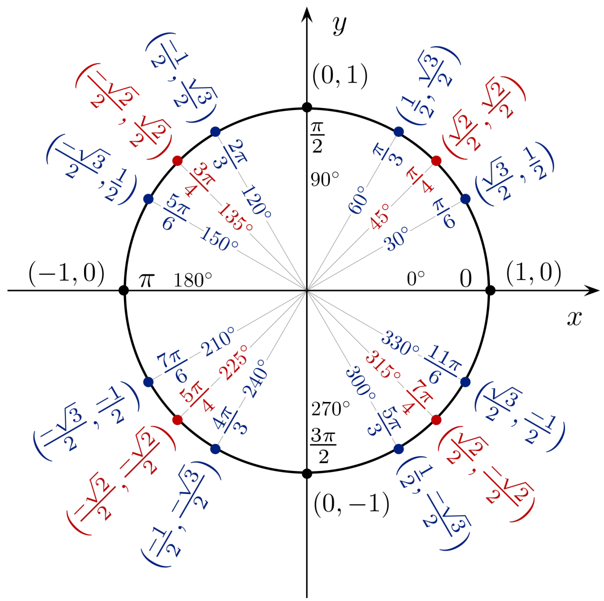
$$\sin 3\theta = 3(\cos\theta)^2\sin\theta - (\sin\theta)^2$$
$$= 3\sin\theta - 4(\sin\theta)^3$$
$$\cos 3\theta = (\cos\theta)^3 - 3(\sin\theta)^2\cos\theta$$
$$= 4(\cos\theta)^3 + -3\cos\theta$$

Arcusfunktionerna

$$\sin^{-1}x + \cos^{-1}x = \pi/2$$
$$\tan^{-1}x + \cot^{-1}x = \pi/2$$
$$\tan^{-1}x + \tan^{-1}1/x = \begin{cases}\pi/2 & \text{if } x>0\\ -\pi/2 & \text{if } x<0\end{cases}$$

$$\sin[\arccos(x)] = \sqrt{1-x^2} \qquad \tan[\arcsin(x)] = \frac{x}{\sqrt{1-x^2}}$$
$$\sin[\arctan(x)] = \frac{x}{\sqrt{1+x^2}} \qquad \tan[\arccos(x)] = \frac{\sqrt{1-x^2}}{x}$$
$$\cos[\arctan(x)] = \frac{1}{\sqrt{1+x^2}} \qquad \cot[\arcsin(x)] = \frac{\sqrt{1-x^2}}{x}$$
$$\cos[\arcsin(x)] = \sqrt{1-x^2} \qquad \cot[\arccos(x)] = \frac{x}{\sqrt{1-x^2}}$$

Enhetscirkeln med standardvinklar



Trigonometri Referens, trigref.pdf v. 0.1
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