Hornafræði

Skilgreiningar

Sinus: sin(v) Cosinus: cos(v) Tangens: tan(v) Cotangens: cot(v)

$$\cos(v)=\frac{\text{aðlæg hlið}}{\text{langhlið}}=\frac{b}{c} \qquad \sin(v)=\frac{\text{mótlæg hlið}}{\text{langhlið}}=\frac{a}{c} \qquad \tan(v)=\frac{\text{mótlæg hlið}}{\text{aðlæg hlið}}=\frac{a}{b}=\frac{1}{\cot(v)}$$

Umskriftarreglur

$\sin(v+360°h) = \sin(v)$	$\cos(v+360°h) = \cos(v)$	$\tan(v+180°h) = \tan(v)$	$\cot(v+180°h) = \cot(v)$
$\sin(180°-v) = \sin(v)$	$\cos(180°-v) = -\cos(v)$	$\tan(180°-v) = -\tan(v)$	$\cot(180°-v) = -\cot(v)$
$\sin(360°-v) = -\sin(v)$	$\cos(360°-v) = \cos(v)$	$\tan(360°-v) = -\tan(v)$	$\cot(360°-v) = -\cot(v)$
$\sin(v+180°) = -\sin(v)$	$\cos(v+180°) = -\cos(v)$	$\tan(v+180°) = \tan(v)$	$\cot(v+180°) = \cot(v)$
$\sin(-v) = -\sin(v)$	$\cos(-v) = \cos(v)$	$\tan(-v) = -\tan(v)$	$\cot(-v) = -\cot(v)$

$$\sin^2(v)+\cos^2(v)=1$$

Lausn á hornafallajöfnu

$\sin(v)=k$

$$v=\begin{cases}\sin^{-1}(k)\\ 180-\sin^{-1}(k)\end{cases}$$

$\cos(v)=k$

$$v=\begin{cases}\cos^{-1}(k)\\ -\cos^{-1}(k)\end{cases}$$

$\tan(v)=k$

$$v=\tan^{-1}(k)$$

Flatarmál þríhyrnings $F = \frac{1}{2}\cdot b\cdot c\cdot \sin(A)$

Sinusreglan $\frac{a}{\sin(A)} = \frac{b}{\sin(B)} = \frac{c}{\sin(C)}$	**Cosínusreglan** $a^2 = b^2 + c^2 - 2\cdot b\cdot c\cdot \cos(A)$

v (rad)	0	π/6	π/4	π/3	π/2
v° (gráður)	0	30°	45°	60°	90°
sin(v)	0	$1/2$	$1/\sqrt{2}=\sqrt{2}/2$	$\sqrt{3}/2$	1
cos(v)	1	$\sqrt{3}/2$	$1/\sqrt{2}=\sqrt{2}/2$	$1/2$	0
tan(v)	0	$\sqrt{3}/3 = 1/\sqrt{3}$	1	$\sqrt{3}$	óskilgr.
cot(v)	óskilgr.	$\sqrt{3}$	1	$\sqrt{3}/3=1/\sqrt{3}$	0