$$\sin\left(0+(\pi k)\right)=0=\cos\left(\frac{\pi}{2}+(\pi k)\right),\cos\left(0\right)=1=\sin\left(\frac{\pi}{2}\right)$$
 .1

$$\sin(-\alpha) = -\sin(\alpha), \cos(-\alpha) = \cos(\alpha)$$
 .2

$$\cos\left(\varphi\right) = \begin{cases} -\sin\left(\alpha\right) & \varphi = \left(\alpha + \frac{1}{2}\pi\right) + 2\pi k \\ \sin\left(\alpha\right) & \varphi = \left(\frac{1}{2}\pi - \alpha\right) + 2\pi k \\ -\cos\left(\alpha\right) & \varphi = \left(\alpha + \pi\right) + 2\pi k \\ -\cos\left(\alpha\right) & \varphi = \left(\pi - \alpha\right) + 2\pi k \end{cases} . \mathbf{3}$$

$$\sin\left(\varphi\right) = \begin{cases} \cos\left(\alpha\right) & \varphi = \left(\alpha + \frac{1}{2}\pi\right) + 2\pi k \\ \cos\left(\alpha\right) & \varphi = \left(\frac{1}{2}\pi - \alpha\right) + 2\pi k \\ -\sin\left(\alpha\right) & \varphi = \left(\alpha + \pi\right) + 2\pi k \\ \sin\left(\alpha\right) & \varphi = \left(\pi - \alpha\right) + 2\pi k \end{cases} \text{.4}$$

$$orall heta \in \mathbb{R} an ( heta) = rac{\sin( heta)}{\cos( heta)}$$
 מוגדרת  $an: \mathbb{R}ackslash \left\{rac{1}{2}\pi + \pi k \mid k \in \mathbb{Z}
ight\} o \mathbb{R}$  .5

$$\cos\left(\alpha\pm\beta\right)=\cos\left(\alpha\right)\cos\left(\beta\right)\mp\sin\left(\alpha\right)\sin\left(\beta\right)\ .6$$

$$\sin(\alpha \pm \beta) = \sin(\alpha)\cos(\beta) \pm \sin(\beta)\cos(\alpha)$$
.7

$$\cos{(\alpha)} - \cos{(\beta)} = -2\sin{\left(\frac{\alpha+\beta}{2}\right)}\sin{\left(\frac{\alpha+\beta}{2}\right)}$$
 .8

$$\sin{(\alpha)}-\sin{(\beta)}=2\sin{\left(\frac{\alpha+\beta}{2}\right)}\sin{\left(\frac{\alpha+\beta}{2}\right)}\ .9$$

$$\sin^2\left(\alpha\right) + \cos^2\left(\alpha\right) = 1 .10$$