

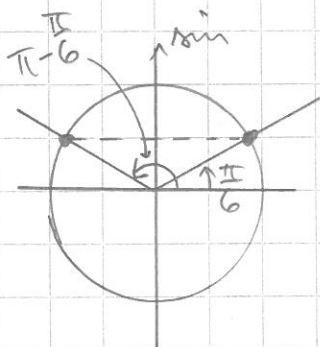
TAI: Kosinilause $18^2 = 10^2 + 10^2 - 2 \cdot 10 \cdot 10 \cdot \cos 2\alpha$
 $\Rightarrow 18^2 - 10^2 - 10^2 = -2 \cdot 10 \cdot 10 \cdot \cos 2\alpha$

$\Rightarrow \cos 2\alpha = \frac{18^2 - 10^2 - 10^2}{-2 \cdot 10 \cdot 10} = -\frac{31}{50}$

5. Siniyhtälö

Esim. Ratkaise yhtälö $\sin x = \frac{1}{2}$

Ratk. $\sin x = \frac{1}{2}$ $\Rightarrow$ $x = \frac{\pi}{6}$ ($= 30^\circ$)



Käy myös kuluot

$$\begin{aligned} &\frac{\pi}{6} + 2\pi \\ &\frac{\pi}{6} + 2 \cdot 2\pi \\ &\frac{\pi}{6} + 3 \cdot 2\pi \\ &\vdots \\ &\frac{\pi}{6} - 2\pi \\ &\frac{\pi}{6} - 2 \cdot 2\pi \\ &\vdots \end{aligned}$$

Vai elle myös $x = \pi - \frac{\pi}{6} = \frac{6\pi}{6} - \frac{\pi}{6} = \frac{5\pi}{6}$

Käy myös kuluot

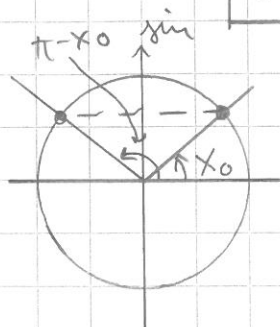
$$\begin{aligned} &\frac{5\pi}{6} + 2\pi \\ &\frac{5\pi}{6} + 2 \cdot 2\pi \\ &\vdots \\ &\frac{5\pi}{6} - 2\pi \\ &\frac{5\pi}{6} - 2 \cdot 2\pi \\ &\vdots \end{aligned}$$

Vast. $x = \frac{\pi}{6} + m \cdot 2\pi$ tai $x = \frac{5\pi}{6} + m \cdot 2\pi$, $m \in \mathbb{Z} = \{0, \pm 1, \pm 2, \dots\}$

Yleisesti

$\sin x = a = \sin x_0$

SINIYHTÄLÖ



$\Rightarrow x = x_0 + m \cdot 2\pi$ tai $x = \pi - x_0 + m \cdot 2\pi$, $m \in \mathbb{Z}$

Esim. $2 \sin 5x - \sqrt{3} = 0$

$1 + \sqrt{3}$

$\Rightarrow 2 \sin 5x = \sqrt{3}$

$1:2$

$\Rightarrow \sin 5x = \frac{\sqrt{3}}{2}$

$= \sin \frac{\pi}{3}$

$\uparrow$
kosini