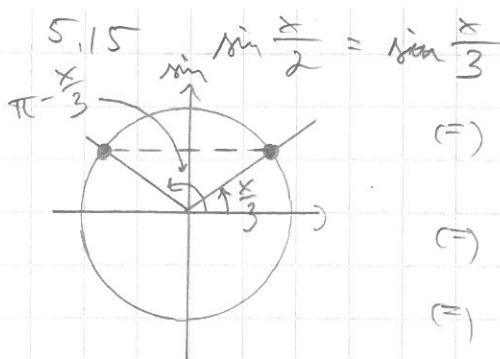




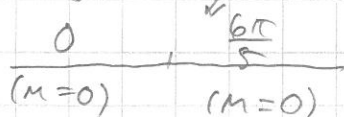
$$\Rightarrow \frac{x}{2} = \frac{x}{3} + m2\pi \quad | \cdot 6 \quad \tan \frac{x}{2} = \pi - \frac{x}{3} + m2\pi \quad | \cdot 6$$

$$\Rightarrow 3x = 2x + m12\pi \quad \tan \quad 3x = 6\pi - 2x + m12\pi$$

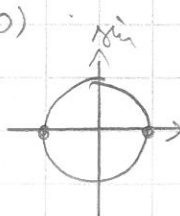
$$\Rightarrow x = m12\pi \quad \tan \quad 5x = 6\pi + m12\pi \quad | :5$$

$$\Rightarrow x = \frac{6\pi}{5} + m \frac{12\pi}{5}, m \in \mathbb{Z}$$

b) $x \in [0, 2\pi]$



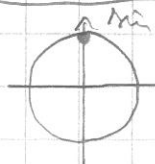
5.23 a) $\sin(\sin x) = 0$



$$\Rightarrow \sin x = m\pi \quad \begin{matrix} 3, 14, 15, \dots \\ -1 \leq \sin x \leq 1 \end{matrix}$$

$$\Rightarrow \text{on alternative } m=0$$

$$\Rightarrow \sin x = 0 \quad \Rightarrow x = m\pi, m \in \mathbb{Z}$$



b) $\sin(\sin x) = 1$

$$\Rightarrow \sin x = \frac{\pi}{2} + m2\pi \quad \begin{matrix} 1, 57 \quad 6, 28 \\ -1 \leq \sin x \leq 1 \end{matrix}$$

Milloin $\sin$ kokonaisluku-
arvolle $\frac{\pi}{2} + m2\pi$ ei ole
välttämättä $[-1, 1]$

$\Rightarrow$ ei ratk.

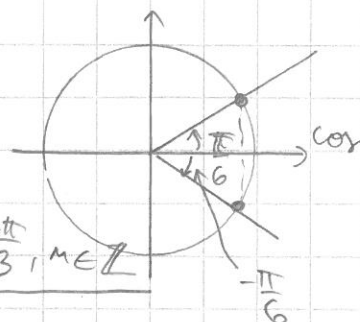
6. Kosinikäytö

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

$$\Rightarrow 2 \cos 3x = \sqrt{3} \quad | :2$$

$$\Rightarrow \cos 3x = \frac{\sqrt{3}}{2} = \cos \frac{\pi}{6}$$

$$\Rightarrow 3x = \pm \frac{\pi}{6} + m2\pi \quad | :3 \quad \Rightarrow x = \pm \frac{\pi}{18} + m \frac{2\pi}{3}, m \in \mathbb{Z}$$



yleisesti

$$\cos x = a = \cos x_0$$

$$\Rightarrow x = \pm x_0 + m2\pi, m \in \mathbb{Z}$$

