

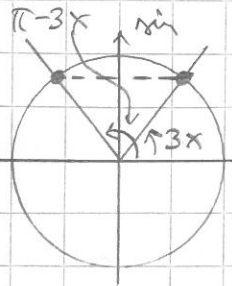
$$b) \sin 4x - \sin 3x = 0$$

$$\Leftrightarrow \sin 4x = \sin 3x = 0$$

$$\Leftrightarrow 4x = 3x + m2\pi \text{ tai } 4x = \pi - 3x + m2\pi$$

$$\Leftrightarrow \underline{x = m2\pi} \text{ tai } \underline{7x = \pi + m2\pi} \quad | :7$$

$$\Leftrightarrow \underline{x = \frac{\pi}{7} + m \frac{2\pi}{7}, m \in \mathbb{Z}}$$



$$5.15 a) \sin \frac{x}{2} = \sin \frac{x}{3}$$

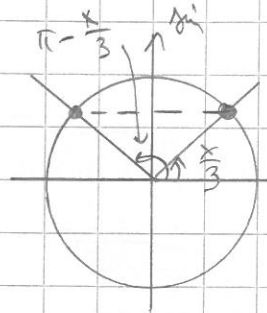
$$\Leftrightarrow \frac{x}{2} = \frac{x}{3} + m2\pi \quad | \cdot 6 \text{ tai } \frac{x}{2} = \pi - \frac{x}{3} + m2\pi \quad | \cdot 6$$

$$\Leftrightarrow 3x = 2x + m12\pi \text{ tai } 3x = 6\pi - 2x + m12\pi$$

$$\Leftrightarrow \underline{x = m \cdot 12\pi} \text{ tai } \underline{5x = 6\pi + m12\pi} \quad | :5$$

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

$$b) x \in [0, 2\pi] : \underline{0, \frac{6\pi}{5}}$$



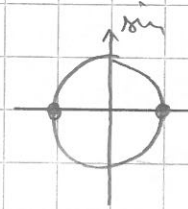
$$5.23 a) \sin(\sin x) = 0$$

kuuluma

$$\Leftrightarrow \sin x = m\pi$$

$$-1 \leq \sin x \leq 1 \Rightarrow m=0 \text{ eli } \sin x = 0$$

$$\Leftrightarrow \underline{x = m\pi, m \in \mathbb{Z}}$$



6. Kosinilaitalo

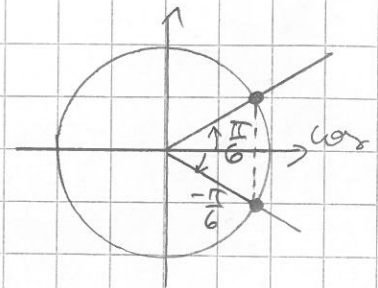
$$\text{Esim. } 2\cos 3x - \sqrt{3} = 0 \quad | +\sqrt{3}$$

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

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

$$\Leftrightarrow 3x = \frac{\pi}{6} + m2\pi \quad | :3 \text{ tai } 3x = -\frac{\pi}{6} + m2\pi \quad | :3$$

$$\Leftrightarrow \underline{x = \frac{\pi}{18} + m \frac{2\pi}{3}} \text{ tai } \underline{x = -\frac{\pi}{18} + m \frac{2\pi}{3}, m \in \mathbb{Z}}$$



Yleisesti

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

KOSINIYHTALÖ

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

