

Peruskaava

E1 Määritä lausekkeen $\cos \alpha$
laskuka arvo, kun

$$\sin \alpha = -\frac{1}{5} \text{ ja } \pi < \alpha < \frac{3\pi}{2}$$

Ratk.

I tms

$$\sin^2 \alpha + \cos^2 \alpha = 1$$

$$\cos^2 \alpha = 1 - \sin^2 \alpha \quad \parallel \sqrt{\quad}$$

$$\cos \alpha = \pm \sqrt{1 - \sin^2 \alpha}$$

$$= \pm \sqrt{1 - \left(-\frac{1}{5}\right)^2}$$

$$= \pm \sqrt{1 - \frac{1}{25}}$$

$$= \pm \sqrt{\frac{25}{25} - \frac{1}{25}}$$

$$= \pm \sqrt{\frac{24}{25}}$$

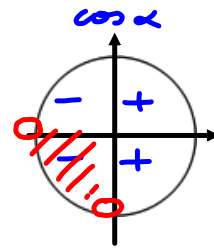
$$\underline{\underline{V: \cos \alpha = \pm \frac{2\sqrt{6}}{5}}}$$

1.2 E3

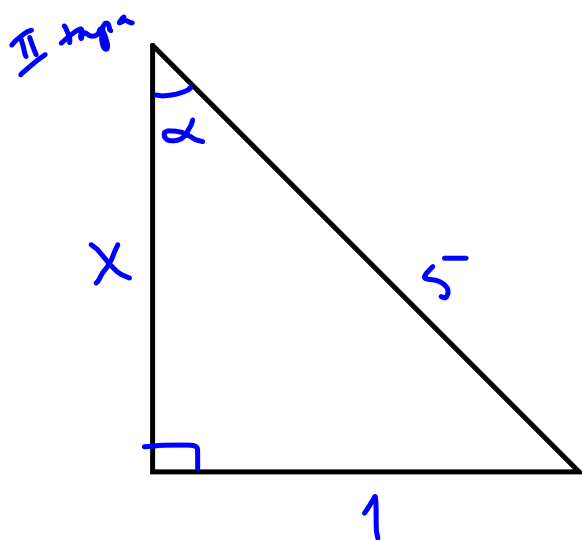
1.3 E3

S.20

$$\begin{aligned} \sin^2 \alpha &= \sin \alpha \cdot \sin \alpha \\ &= (\sin \alpha)^2 \end{aligned}$$



$$\begin{aligned} \sqrt{24} &= \sqrt{4 \cdot 6} \\ &= \sqrt{4} \cdot \sqrt{6} \\ &= 2\sqrt{6} \end{aligned}$$



Pythagoraan lause

jne.
kostona

1.4 SINIYHTÄLÖ JA KOSINIYHTÄLÖ

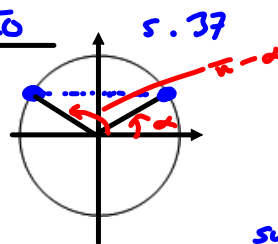
lause

$$\sin x = a$$

$$x = \alpha$$

$$x = \alpha + n \cdot 2\pi \text{ tai } x = \pi - \alpha + n \cdot 2\pi$$

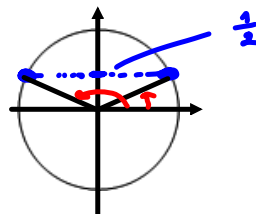
n kuuluu kokonaislukuihin

supplementti-
kulmatE1

$$\sin x = \frac{1}{2}$$

$$x = \frac{\pi}{6} + n \cdot 2\pi \text{ tai } x = \pi - \frac{\pi}{6} + n \cdot 2\pi$$

$$\vee: x = \frac{\pi}{6} + n \cdot 2\pi \text{ tai } x = \frac{5\pi}{6} + n \cdot 2\pi, n \in \mathbb{Z}$$


 π -Nspira
 \sin^{-1}
lause

$$\cos x = a$$

$$x = \alpha$$

$$x = \alpha + n \cdot 2\pi \text{ tai } x = -\alpha + n \cdot 2\pi, n \in \mathbb{Z}$$

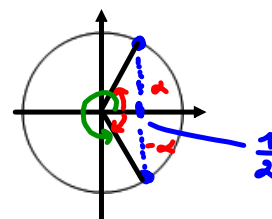
E2

$$\cos x = \frac{1}{2}$$

$$x = \frac{\pi}{3} + n \cdot 2\pi \text{ tai } x = \frac{5\pi}{3} + n \cdot 2\pi$$

$$x = \frac{\pi}{3} + n \cdot 2\pi \text{ tai } x = -\frac{\pi}{3} + n \cdot 2\pi, n \in \mathbb{Z}$$

$$\vee: x = \pm \frac{\pi}{3} + n \cdot 2\pi$$


 \cos^{-1} π -Nspira
E3

Ratkaise yhtälö

$$\sin x = \frac{-\sqrt{3}}{2}, \quad -\frac{\pi}{2} < x < 2\pi$$