Kalkulus 8. gyakorlat megoldások

2023. október 12.

1.feladat

a, $\frac{\sqrt{3}}{2}$

b, $-\frac{\sqrt{3}}{2}$

c, $-\frac{\sqrt{3}}{2}$

d, 0

e, 0

f, $-\sqrt{3}$

g, $-\sqrt{3}$

2.feladat

a, $x_1 = \frac{\pi}{6}$, $x_2 = \pi - \frac{\pi}{6} = \frac{5\pi}{6}$

b, $x_1 = \frac{\pi}{4}$, $x_2 = \frac{\pi}{4} + \pi = \frac{5\pi}{4}$

c, $x_1 = \frac{5\pi}{6}$, $x_2 = \pi + \frac{5\pi}{6} = \frac{11\pi}{6}$

d, $x_1 = \frac{5\pi}{6}$, $x_2 = 2\pi - \frac{5\pi}{6} = \frac{7\pi}{6}$

3.feladat

a, $\frac{\pi}{2}$

b, $\frac{\pi}{6}$

c, $-\frac{\pi}{3}$

d, $\frac{\pi}{4}$

e, $\frac{\pi}{3}$

f, $\frac{5\pi}{6}$

g, $\frac{\pi}{2}$

4.feladat

$a = (\sqrt{3}, 2)$: $\alpha = \arctan(\frac{2}{\sqrt{3}})$, $||a|| = \sqrt{7}$

$b = (-\sqrt{5}, \sqrt{5})$: $\beta = \frac{\pi}{4} + \frac{\pi}{2} = \frac{3\pi}{4}$, $||b|| = \sqrt{10}$

$c = (-\frac{1}{2}, -\frac{\sqrt{3}}{2})$: $\gamma = \frac{\pi}{3} + \pi = \frac{4\pi}{3}$

5.* feladat

$\sin^2(\frac{\pi}{12}) = \frac{1-\cos(2\cdot\pi/12)}{2} = \frac{1-\sqrt{3}/2}{2} \xrightarrow{\pi/12\text{hegyesszög}} \sin(\frac{\pi}{12}) = \sqrt{\frac{1-\sqrt{3}/2}{2}}$

$$\cos(\tfrac{7\pi}{12}) = \cos(\tfrac{\pi}{12})\cos(\tfrac{\pi}{2}) - \sin(\tfrac{\pi}{12})\sin(\tfrac{\pi}{2}) = -\sin(\tfrac{\pi}{12})$$