

22.10.2025

Adı- Soyadı:

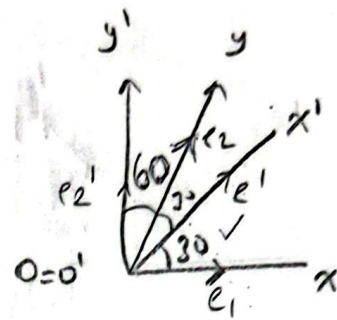
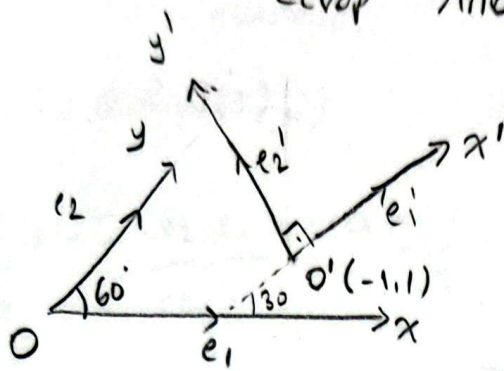
Numara:

MAT204 ANALİTİK GEOMETRİ I DERSİ QUIZ SINAVI

Soru 1) xoy eğik koordinat sisteminde $O' = (-1, 1)$ ve $A(2, -1)$ noktaları veriliyor. A noktasının $x'o'y'$ dik koordinat sistemindeki karşılığını bulunuz? ($m(xx') = 30^\circ, m(xoy) = 60^\circ$)

Soru 2) Kartezyen koordinatlarda verilen $K = (-2, 2, 6)$ noktasının silindirik koordinatlarını bulunuz.

Cevap Anlatımı



Xoy
egik

x'o'y'
dik

$$A(2, -1)$$

$$A'(a, b)$$

$$\overrightarrow{OA} = \overrightarrow{OO'} + \overrightarrow{O'A}$$

$$2\vec{e}_1 - \vec{e}_2 = -1\vec{e}_1' + 1\vec{e}_2' = a\vec{e}_1' + b\vec{e}_2'$$

$$3\vec{e}_1 - 2\vec{e}_2 = a\vec{e}_1' + b\vec{e}_2'$$

$$3\underbrace{\langle \vec{e}_1, \vec{e}_1 \rangle}_1 - 2\underbrace{\langle \vec{e}_2, \vec{e}_1 \rangle}_{\cos 60} = a\underbrace{\langle \vec{e}_1', \vec{e}_1 \rangle}_{\cos 30} + b\underbrace{\langle \vec{e}_2', \vec{e}_1 \rangle}_{\cos(180-60) = -\cos 60}$$

$$\Rightarrow 3 + 1 = a\frac{\sqrt{3}}{2} - \frac{b}{2}$$

$$4 = a\sqrt{3} - b$$

$$3\underbrace{\langle \vec{e}_1, \vec{e}_2 \rangle}_{\cos 60} - 2\underbrace{\langle \vec{e}_2, \vec{e}_2 \rangle}_1 = a\underbrace{\langle \vec{e}_1', \vec{e}_2 \rangle}_{\cos 30} + b\underbrace{\langle \vec{e}_2', \vec{e}_2 \rangle}_{\cos 60}$$

$$\frac{3}{2} - 2 = a\frac{\sqrt{3}}{2} + \frac{b}{2}$$

$$-\frac{1}{2} = \frac{a\sqrt{3} + b}{2}$$

$$4 = \frac{\sqrt{3}}{2} \cdot \sqrt{3} - b$$

$$b = \frac{3}{2} - 4$$

$$b = -\frac{5}{2} \#$$

$$a\sqrt{3} - b = 4$$

$$+ \quad a\sqrt{3} + b = -1$$

$$2a\sqrt{3} = 3$$

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

$$A' \left(\frac{\sqrt{3}}{2}, -\frac{5}{2} \right)$$

2)

Kartezyen

$$K = (-2, 2, 6)$$

Sillindrik

$$L = (r, \theta, z)$$

$$r = \pm \sqrt{x^2 + y^2}$$

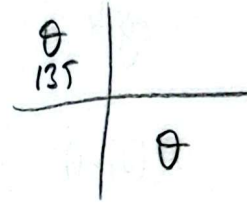
$$r = \pm \sqrt{4 + 4} = \pm \sqrt{8}$$

$$\tan \theta = \frac{y}{x} \Rightarrow \tan \theta = -1$$

$$\theta = \arctan(-1)$$

$$\downarrow$$

$$\theta = 135, 315$$



$$\hat{x} = \hat{r} \cos \theta$$

$$\hat{y} = \hat{r} \sin \theta$$

$$r = +\sqrt{8}$$

$$\cos \theta \Rightarrow -$$

$$\sin \theta \Rightarrow +$$

II. bölge

$$(\sqrt{8}, 135, 6)$$

$$r = -\sqrt{8}$$

$$\cos \theta \Rightarrow +$$

$$\sin \theta \Rightarrow -$$

IV. bölge

$$(\sqrt{8}, 315, 6)$$