

CEVAP ANAHTARI

$$1) R \begin{cases} x' = x \cos \alpha - y \sin \alpha + h(1 - \cos \alpha) + k \sin \alpha \\ y' = x \sin \alpha + y \cos \alpha + k(1 - \cos \alpha) - h \sin \alpha \end{cases}$$

$$(x, y) = (0, 2), \quad (x', y') = (2, 0)$$

$$2 = 0 \cos \frac{\pi}{6} - 2 \sin \frac{\pi}{6} + h(1 - \cos \frac{\pi}{6}) + k \sin \frac{\pi}{6}$$

$$0 = 0 \sin \frac{\pi}{6} + 2 \cos \frac{\pi}{6} + k(1 - \cos \frac{\pi}{6}) - h \sin \frac{\pi}{6}$$

$$\Rightarrow 2 = -2 \cdot \frac{1}{2} + h(1 - \frac{\sqrt{3}}{2}) + k \cdot \frac{1}{2}$$

$$0 = 2 \cdot \frac{\sqrt{3}}{2} + k(1 - \frac{\sqrt{3}}{2}) - h \cdot \frac{1}{2}$$

$$\Rightarrow 4 = -2 + h(2 - \sqrt{3}) + k$$

$$0 = 2\sqrt{3} + k(2 - \sqrt{3}) - h$$

$$\Rightarrow (2 - \sqrt{3})h + k = 6$$

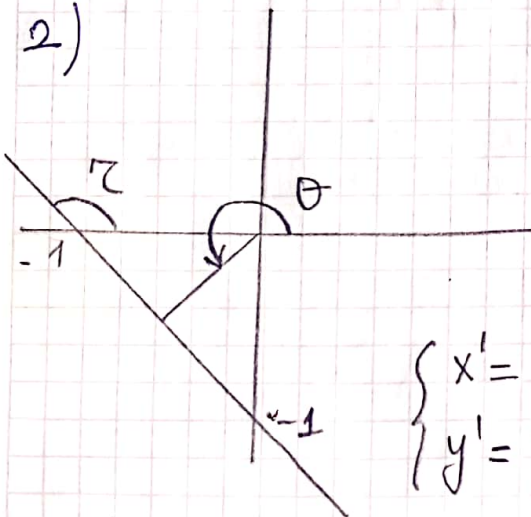
$$-h + (2 - \sqrt{3})k = -2\sqrt{3}$$

$$O'(h, k) = \left(\frac{3 - \sqrt{3}}{2 - \sqrt{3}}, 3 + \sqrt{3} \right)$$

$$\Rightarrow h = 3 + \sqrt{3}$$

$$k = \frac{3 - \sqrt{3}}{2 - \sqrt{3}}$$

2)



$$z = \frac{3\pi}{4}$$

$$\theta = \frac{5\pi}{4}$$

$$P = \frac{\sqrt{2}}{2}$$

$$\begin{cases} x' = x \cos 2z + y \sin 2z + 2P \cos \theta \\ y' = x \sin 2z - y \cos 2z + 2P \sin \theta \end{cases}$$

$$\begin{cases} x' = x \cos \frac{3\pi}{2} + y \sin \frac{3\pi}{2} + 2 \cdot \frac{\sqrt{2}}{2} \cos \frac{5\pi}{4} \\ y' = x \sin \frac{3\pi}{2} - y \cos \frac{3\pi}{2} + 2 \cdot \frac{\sqrt{2}}{2} \sin \frac{5\pi}{4} \end{cases}$$

$$\begin{cases} x' = -y - 1 \\ y' = -x - 1 \end{cases}$$

$$\begin{cases} x' = -y - 1 \\ y' = -x - 1 \end{cases}$$

$$3) \quad T \dots \begin{cases} x' = x + a \\ y' = y + b \end{cases}$$

$$A(x, y) = (1, 3)$$

$$B(x', y') = (-3, -5)$$

$$-3 = 1 + a \Rightarrow a = -4$$

$$-5 = 3 + b \Rightarrow b = -8$$

$$\Rightarrow T \dots \begin{cases} x' = x - 4 \\ y' = y - 8 \end{cases} \text{ öteleme}$$

$$(h, k) = \left(\frac{x+x'}{2}, \frac{y+y'}{2} \right) = (-1, -1) \text{ merkezli ve}$$

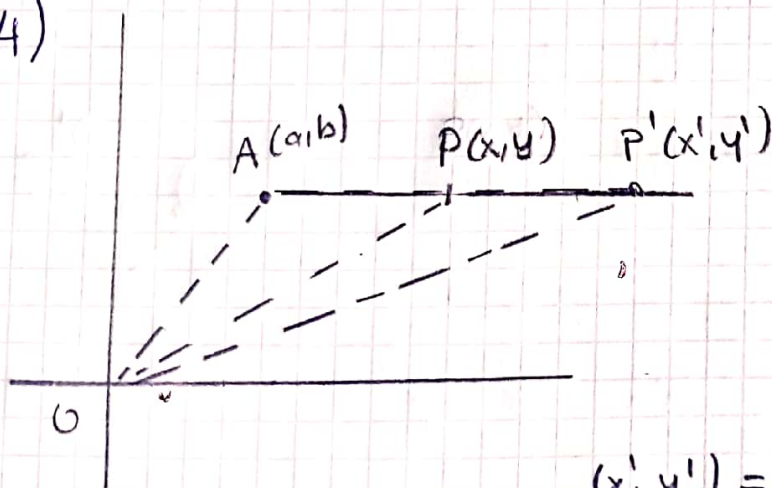
$\alpha = \pi$ açılı dönme

$$D \dots \begin{cases} x' = x \cos \alpha - y \sin \alpha + h(1 - \cos \alpha) + k \sin \alpha \\ y' = x \sin \alpha + y \cos \alpha + k(1 - \cos \alpha) - h \sin \alpha \end{cases}$$

$$D \dots \begin{cases} x' = x \cos \pi - y \sin \pi - 1(1 - \cos \pi) - 1 \sin \pi \\ y' = x \sin \pi + y \cos \pi - 1(1 - \cos \pi) + 1 \sin \pi \end{cases}$$

$$D \dots \begin{cases} x' = -x - 2 \\ y' = -y - 2 \end{cases}$$

4)



$$AP' = kAP$$

$$\begin{aligned} \vec{OP}' &= \vec{OA} + \vec{AP}' \\ &= \vec{OA} + k\vec{AP} \end{aligned}$$

$$\begin{aligned} (x', y') &= (a, b) + k(x-a, y-b) \\ &= (a, b) + (k(x-a), k(y-b)) \\ \Rightarrow \begin{cases} x' = a + k(x-a) \\ y' = b + k(y-b) \end{cases} \end{aligned}$$