

Rīģenijs

(3)

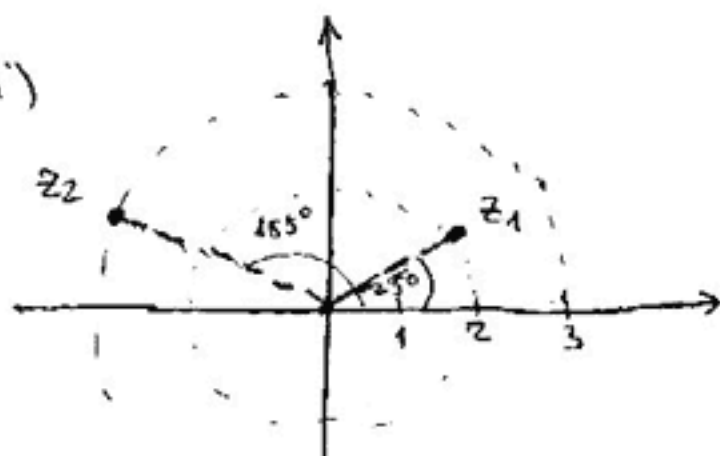
$$1. (i) \quad z_1 = |z_1| (\cos \alpha + i \sin \alpha)$$

$$z_2 = |z_2| (\cos \beta + i \sin \beta)$$

1 bod

$$z_1 \cdot z_2 = |z_1| |z_2| (\cos(\alpha + \beta) + i \sin(\alpha + \beta))$$

(ii)



1 bod

(crtēi tveka izmēdēt
nervuolam, jēstamam i
jēstamam jēstamam)

(iii)

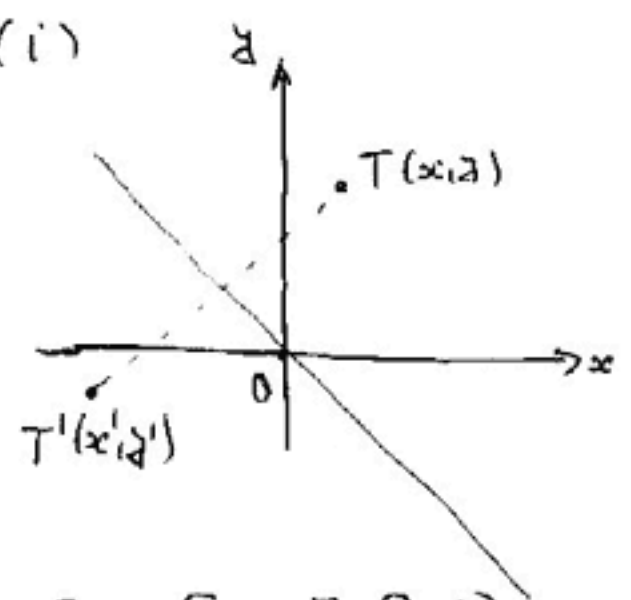
$$z_1 = 2 (\cos 25^\circ + i \sin 25^\circ)$$

$$z_2 = 3 (\cos 155^\circ + i \sin 155^\circ)$$

1 bod

$$\begin{aligned} z_1 \cdot z_2 &= 2 \cdot 3 (\cos(25^\circ + 155^\circ) + i \sin(25^\circ + 155^\circ)) \\ &= 6 \cdot (\cos 180^\circ + i \sin 180^\circ) \\ &= -6 \end{aligned}$$

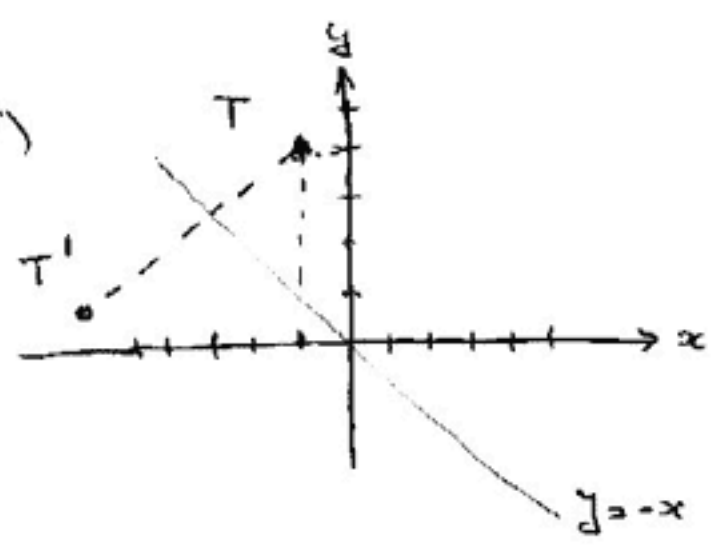
2. (i)



1. bod

$$\begin{bmatrix} x' \\ y' \end{bmatrix} = \begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix}$$

(ii)



1. bod

(crtež treba uvesti uvedući vrlo jasno)

(iii)

$$\begin{bmatrix} x' \\ y' \end{bmatrix} = \begin{bmatrix} 0 & -1 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} -1 \\ 4 \end{bmatrix}$$

$$= \begin{bmatrix} -4 \\ 1 \end{bmatrix}$$

1. bod

$$T' = (-4, 1)$$

$$3. (i) \quad A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

(5)

$$A^{-1} = \frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

(1 bad)

$$(ii) \quad A = \begin{bmatrix} 2 & -3 \\ -5 & 7 \end{bmatrix}$$

$$ad-bc = -1$$

$$A^{-1} = \frac{1}{-1} \begin{bmatrix} 7 & 3 \\ 5 & 2 \end{bmatrix}$$

$$= \begin{bmatrix} -7 & -3 \\ -5 & -2 \end{bmatrix}$$

(1 bad)

$$A \cdot A^{-1} = \begin{bmatrix} 2 & -3 \\ -5 & 7 \end{bmatrix} \begin{bmatrix} -7 & -3 \\ -5 & -2 \end{bmatrix}$$

$$= \begin{bmatrix} 2 \cdot (-7) + (-3) \cdot (-5) & 2 \cdot (-3) + (-3) \cdot (-2) \\ -5 \cdot (-7) + 7 \cdot (-5) & -5 \cdot (-3) + 7 \cdot (-2) \end{bmatrix}$$

$$= \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$(iii) \quad \det A = 1 \cdot \begin{vmatrix} 1 & 1 \\ 0 & 1 \end{vmatrix} - 1 \cdot \begin{vmatrix} 0 & 1 \\ 1 & 1 \end{vmatrix} = 2$$

$$A^t = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 0 \\ 0 & 1 & 1 \end{bmatrix}$$

$$A^* = \begin{bmatrix} \begin{vmatrix} 1 & 0 \\ 1 & 1 \end{vmatrix} & -\begin{vmatrix} 0 & 1 \\ 0 & 1 \end{vmatrix} & \begin{vmatrix} 1 & 1 \\ 0 & 1 \end{vmatrix} \\ -\begin{vmatrix} 0 & 1 \\ 1 & 1 \end{vmatrix} & \begin{vmatrix} 1 & 1 \\ 0 & 1 \end{vmatrix} & -\begin{vmatrix} 1 & 0 \\ 0 & 1 \end{vmatrix} \\ \begin{vmatrix} 0 & 1 \\ 1 & 0 \end{vmatrix} & -\begin{vmatrix} 1 & 1 \\ 1 & 0 \end{vmatrix} & \begin{vmatrix} 1 & 0 \\ 1 & 1 \end{vmatrix} \end{bmatrix} = \begin{bmatrix} 1 & -1 & 1 \\ 1 & 1 & -1 \\ -1 & 1 & 1 \end{bmatrix}$$

~~scribbled out text~~

(6)

$$A^{-1} = \frac{1}{\det A} A^*$$

$$= \frac{1}{2} \begin{bmatrix} 1 & -1 & 1 \\ 1 & 1 & -1 \\ -1 & 1 & 1 \end{bmatrix} \quad (1 \text{ bod})$$

$$= \begin{bmatrix} \frac{1}{2} & -\frac{1}{2} & \frac{1}{2} \\ \frac{1}{2} & \frac{1}{2} & -\frac{1}{2} \\ -\frac{1}{2} & \frac{1}{2} & \frac{1}{2} \end{bmatrix} \quad (\text{onoj konak})$$

(miji matice)

→ Tu je ostalo ~~pejina~~ probona,
 međutim probimo na zjedeci
 bodeteli i uzimamo nov list
 papira.

4. (i) $\vec{a} \times \vec{b} = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \end{vmatrix}$ (1 bad) (5)

(ii) $\vec{a} \times \vec{b} = \begin{vmatrix} \vec{i} & \vec{j} & \vec{k} \\ 2 & -3 & 4 \\ 1 & 1 & 1 \end{vmatrix}$ (1 bad)

$$= \vec{i} \cdot \begin{vmatrix} -3 & 4 \\ 1 & 1 \end{vmatrix} - \vec{j} \cdot \begin{vmatrix} 2 & 4 \\ 1 & 1 \end{vmatrix} + \vec{k} \cdot \begin{vmatrix} 2 & -3 \\ 1 & 1 \end{vmatrix}$$
$$= -7\vec{i} + 2\vec{j} + 5\vec{k}$$

(iii) $P = |\vec{a} \times \vec{b}|$

$$= |-7\vec{i} + 2\vec{j} + 5\vec{k}|$$

(1 bad)

$$= \sqrt{(-7)^2 + 2^2 + 5^2}$$
$$= \sqrt{78}$$