

Prezime: _____ Ime: _____ BRIND: _____

1. (a) $\dim \text{Ker } \Phi = 2$

$B_1 = ([3, -4, -5, 0]^T, [1, 1, 0, -1]^T, [, , ,]^T, [, , ,]^T)$

(b) $\dim V = 2$

$B_2 = ([2, 1, -1, 3]^T, [1, 0, -1, 4]^T, [, , ,]^T, [, , ,]^T)$

(c) $\dim W = 1$

$B_0 = ([1, 1, 0, -1]^T, [, , ,]^T, [, , ,]^T, [, , ,]^T)$

(d) $p(\lambda) = \lambda^4 + \underline{(-18)}\lambda^3 + \underline{45}\lambda^2 + \underline{0}\lambda + \underline{0}$

$\lambda_1 = \underline{15},$

$\lambda_2 = \underline{3},$

$\lambda_3 = \underline{0},$

$\lambda_4 = \underline{0},$

$(\lambda - 15) \cdot (\lambda - 3) \cdot \lambda^2 =$

$(\lambda^2 - 18\lambda + 45) \cdot \lambda^2 =$

(e) $P = \begin{bmatrix} 0.2991 & -0.3062 & & \\ 0.5581 & & & \\ & & 0.2281 & \\ & & & \end{bmatrix} \quad D = \begin{bmatrix} 15 & 0 & 0 & 0 \\ 0 & 3 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix} \quad P^{-1} = \begin{bmatrix} 0.258 & 0.517 & & \\ -2.02 & & & \\ & & & \\ & & & -1.89 \end{bmatrix}$

(f) $\sigma_1 = 226,19$

$\sigma_2 = 38,81$

$\sigma_3 = 0$

$\sigma_4 = 0$

(g) Da li je matrica S

(i) singularna? DA

(ii) simetrična? DA

(iii) ortogonalna? NE

(iv) dijagonalizibilna? DA

2. (a) $\pi_U(x) = [-7, 86, -0.048, -2.810, -0.857, 0.333]^T$

(b) $d(x, U) = \sqrt{29.524} = 5.4336$

(c) $P_U = \begin{bmatrix} 0.9206 & 0.0634 \\ 0.0634 & \\ & \\ & \end{bmatrix}$

0.7778