Метод Данилевського

Кріпака Ілля

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Iteration: 3 ======================

M 3:
[1.0, 0.0, 0.0, 0.0]
[0.0, 1.0, 0.0, 0.0]
[-0.5761904761904761, -0.07619047619047618, 0.47619047619047616, -2.9047619047619047]
[0.0, 0.0, 0.0, 1.0]

M^(-1) 3:
[1.0, 0.0, 0.0, 0.0]
[0.0, 1.0, 0.0, 0.0]
[1.21, 0.16, 2.1, 6.1]
[0.0, 0.0, 0.0, 1.0]

P 3:
[5.8105714285714285, 1.0505714285714287, 0.37142857142857144, -1.0557142857142856]
[0.36095238095238114, 4.060952380952381, 0.6190476190476191, -3.616190476190476]
[2.1441438095238095, 3.78054380952381, 12.088476190476191, -30.63000476190478]
[0.0, 0.0, 1.0, 0.0]

Iteration: 2 ======================

M 2:
[1.0, 0.0, 0.0, 0.0]
[-0.5671522187158259, 0.26451221051342827, -3.1975495588818035, 8.102010267608266]
[0.0, 0.0, 1.0, 0.0]
[0.0, 0.0, 0.0, 1.0]

M^(-1) 2:
[1.0, 0.0, 0.0, 0.0]
[2.1441438095238095, 3.78054380952381, 12.088476190476191, -30.63000476190478]
[0.0, 0.0, 1.0, 0.0]
[0.0, 0.0, 0.0, 1.0]

P 2:
[5.214737511937688, 0.2778889708736788, -2.9878256365738265, 7.456026215427313]
[3.8384775354651666, 16.745262488062316, -83.78672212831066, 126.70261670107482]
[0.0, 1.0, 0.0, 0.0]
[0.0, 0.0, 1.0, 0.0]

Iteration: 1 ======================

M 1:
[0.2605199563526467, -4.362475052503607, 21.828113191798828, -33.008560172730135]
[0.0, 1.0, 0.0, 0.0]
[0.0, 0.0, 1.0, 0.0]
[0.0, 0.0, 0.0, 1.0]

M^(-1) 1:
[3.8384775354651666, 16.745262488062316, -83.78672212831066, 126.70261670107482]
[0.0, 1.0, 0.0, 0.0]
[0.0, 0.0, 1.0, 0.0]
[0.0, 0.0, 0.0, 1.0]

P 1:
[21.960000000000004, -170.04220000000015, 552.1596780000002, -632.1010990400009]
[1.0, 0.0, 0.0, 0.0]
[0.0, 1.0, 0.0, 0.0]
[0.0, 0.0, 1.0, 0.0]

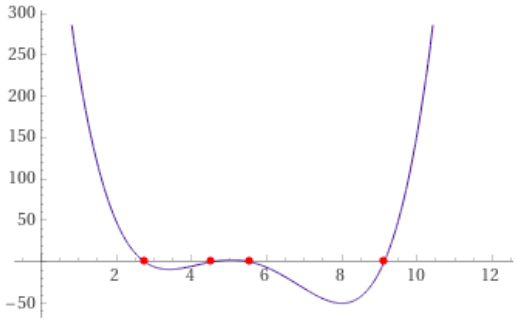
Characteristic polynomial: x^4 + -21.960000000000004x^3 + 170.04220000000015x^2 + -552.1596780000002x^1 + 632.1010990400009
[1.0, -21.960000000000004, 170.04220000000015, -552.1596780000002, 632.1010990400009]
```

Посилання

Result

$$x^4 - 21.960000000000004\,x^3 + 170.04220000000015\,x^2 - 552.1596780000002\,x + 632.1010990400009 = 0$$

Root plot



Alternate forms

$$x\,(x\,((x - 21.960000000000000)\,x + 170.0422000000002) - 552.1596780000002) + 632.1010990400009 = 0$$

$$1.0000000000000000\,(1.0000000000000000\,x - 9.122168113899)\,(1.0000000000000000\,x - 5.54868343974)\,(1.0000000000000000\,x - 4.536066918269)\,(1.0000000000000000\,x - 2.753081528096) = 0$$

Number line

Solutions

Step-by-step solution

$x \approx 2.753081528096$

$x \approx 4.536066918269$

$x \approx 5.54868343974$

$x \approx 9.122168113899$

Перевірка:

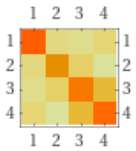
Input

$$\begin{pmatrix} 6.26 & 1.11 & 0.78 & 1.21 \\ 1.11 & 4.16 & 1.3 & 0.16 \\ 0.78 & 1.3 & 5.44 & 2.1 \\ 1.21 & 0.16 & 2.1 & 6.1 \end{pmatrix}$$

Dimensions

4 (rows) × 4 (columns)

Matrix plot



Property

symmetric

Trace — Step-by-step solution

21.96

Determinant — Step-by-step solution

632.101

Inverse — Step-by-step solution

$$\begin{pmatrix} 0.174221 & -0.0447174 & -0.00162172 & -0.0328273 \\ -0.0447174 & 0.272762 & -0.0685416 & 0.0253121 \\ -0.00162172 & -0.0685416 & 0.230211 & -0.0771336 \\ -0.0328273 & 0.0253121 & -0.0771336 & 0.196336 \end{pmatrix}$$

Characteristic polynomial — Step-by-step solution

$$\lambda^4 - 21.96\,\lambda^3 + 170.042\,\lambda^2 - 552.16\,\lambda + 632.101$$

Characteristic polynomial »

Eigenvalues — Exact forms — Step-by-step solution

$\lambda_1 \approx 9.12217$

$\lambda_2 \approx 5.54868$

$\lambda_3 \approx 4.53607$

$\lambda_4 \approx 2.75308$