Oefeningen Toegepaste Algebra en Differentiaalvergelijkingen

LA Zitting 3

Numerieke uitkomsten
versie 2016 – 2017

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Vraag 01: $0\ ,\ 2\ ,\ -1$

Vraag 02: $0\ ,\ 0\ ,\ 6$

Vraag 03: $A = P\ D\ P^{-1}$ met $D = \begin{bmatrix} 5 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ en $P = \begin{bmatrix} -1 & -2 & 1 \\ -1 & 1 & 0 \\ 1 & 0 & 1 \end{bmatrix}$

Vraag 04:

Vraag 05:

Vraag 06:

Vraag 07: $\mathcal{B} = \{\mathbf{v}_1, \mathbf{v}_2\}$ met $\mathbf{v}_1 = \begin{bmatrix} -2 \\ 1 \end{bmatrix}$ en $\mathbf{v}_2 = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$

Vraag 08:

Vraag 09: $\boldsymbol{x} = \frac{5}{2}\boldsymbol{u}_1 - \frac{3}{2}\boldsymbol{u}_2 + 2\boldsymbol{u}_3.$

Vraag 10: $\boldsymbol{y} = \begin{bmatrix} 10/3 \\ 2/3 \\ 8/3 \end{bmatrix} + \begin{bmatrix} -7/3 \\ 7/3 \\ 7/3 \end{bmatrix}$

Vraag 11:

Vraag 12:

Vraag 13:

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Rekenopdrachten ...

(a)

$$\lambda_1 = -2, \quad \lambda_2 = -4, \quad \boldsymbol{\xi}_1 = \begin{bmatrix} 1 \\ -3 \end{bmatrix} \quad , \quad \boldsymbol{\xi}_2 = \begin{bmatrix} 1 \\ -1 \end{bmatrix}$$

(b)

$$\lambda_1 = 2, \quad \lambda_2 = -1, \quad \boldsymbol{\xi}_1 = \begin{bmatrix} 2 \\ 1 \end{bmatrix} \quad , \quad \boldsymbol{\xi}_2 = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

(c)

$$\lambda_1 = 0, \quad \lambda_2 = -2, \quad \boldsymbol{\xi}_1 = \begin{bmatrix} 3 \\ 4 \end{bmatrix} \quad , \quad \boldsymbol{\xi}_2 = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

(d)

$$\lambda_1 = \lambda_2 = -2 \quad \boldsymbol{\xi}_1 = \begin{bmatrix} 1 \\ 0 \end{bmatrix} \quad , \quad \boldsymbol{\xi}_2 = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$$

(e)

$$\lambda_{1,2} = -1 \pm 5i, \quad \boldsymbol{\xi}_{1,2} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} \pm i \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

(f)

$$\lambda_{1,2} = 1 \pm 5i, \quad \boldsymbol{\xi}_{1,2} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} \pm i \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$

(g)

$$\lambda_{1,2} = \pm 2i, \quad \boldsymbol{\xi}_{1,2} = \begin{bmatrix} 5 \\ 1 \end{bmatrix} \pm i \begin{bmatrix} 0 \\ -2 \end{bmatrix}$$

(h)

$$\lambda_{1,2} = 1 \pm i, \quad \boldsymbol{\xi}_{1,2} = \begin{bmatrix} 1 \\ 2 \end{bmatrix} \pm i \begin{bmatrix} 0 \\ -1 \end{bmatrix}$$

Een handig hulpmiddel ...

Zelf-exploratie !