

Facitliste

Facits til kursusgang 4

- a) $F(x_1, x_2) \approx 4x_1 + 4x_2 - 8$

b)

- a)

$$\begin{bmatrix} b_A - b_A^0 \\ b_B - b_B^0 \\ b_C - b_C^0 \\ b_D - b_D^0 \end{bmatrix} = \begin{bmatrix} j_{Ax_P} & j_{Ay_P} \\ j_{Bx_P} & j_{By_P} \\ j_{Cx_P} & j_{Cy_P} \\ j_{Dx_P} & j_{Dy_P} \end{bmatrix} \begin{bmatrix} x_P - x_P^0 \\ y_P - y_P^0 \end{bmatrix} - \begin{bmatrix} \hat{r}_A \\ \hat{r}_B \\ \hat{r}_C \\ \hat{r}_D \end{bmatrix}$$

hvor

$$j_{Ax_P} = \frac{x_P^0 - x_A}{b_A^0}$$

og

$$b_A^0 = \sqrt{(x_P^0 - x_A)^2 + (y_P^0 - y_A)^2}$$

og tilsvarende for de andre j 'er og b 'er.

b)

$$\begin{bmatrix} x_P^1 \\ y_P^1 \end{bmatrix} = \begin{bmatrix} 5 \\ 6.414 \end{bmatrix}$$

c)

$$\begin{bmatrix} x_P^2 \\ y_P^2 \end{bmatrix} = \begin{bmatrix} 5 \\ 6.398 \end{bmatrix}$$

d)

$$\begin{bmatrix} x_P^3 \\ y_P^3 \end{bmatrix} = \begin{bmatrix} 5 \\ 6.398 \end{bmatrix}$$

e)

f) Afstand til A og B:

8.120

Afstand til C og D:

6.162

Facits til kursfgang 3

- Ingen facit

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- a)

$$\begin{bmatrix} 5 \\ 10 \\ 14 \\ 4 \\ 2 \\ 9 \end{bmatrix} = \begin{bmatrix} -1 & 1 & 0 & 0 \\ 1 & 0 & -1 & 0 \\ 0 & 1 & -1 & 0 \\ 0 & 0 & -1 & 1 \\ 1 & 0 & 0 & -1 \\ 0 & 1 & 0 & -1 \end{bmatrix} \begin{bmatrix} h_A \\ h_B \\ h_C \\ h_D \end{bmatrix} - \begin{bmatrix} \hat{r}_1 \\ \hat{r}_2 \\ \hat{r}_3 \\ \hat{r}_4 \\ \hat{r}_5 \\ \hat{r}_6 \end{bmatrix}$$

- b)

$$\begin{bmatrix} 5 \\ 11 \\ 15 \\ 5 \\ 2 \\ 9 \end{bmatrix} = \begin{bmatrix} -1 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \\ 1 & 0 & -1 \\ 0 & 1 & -1 \end{bmatrix} \begin{bmatrix} h_A \\ h_B \\ h_D \end{bmatrix} - \begin{bmatrix} \hat{r}_1 \\ \hat{r}_2 \\ \hat{r}_3 \\ \hat{r}_4 \\ \hat{r}_5 \\ \hat{r}_6 \end{bmatrix}$$

- c)

- d)

$$\begin{bmatrix} 9.25 \\ 15 \\ 6.25 \end{bmatrix}$$

- a)

$$\begin{bmatrix} 3.7 \\ 8.0 \\ -6.1 \\ -5.8 \\ -6.2 \\ -6.1 \\ 8.9 \\ -2.3 \\ -2.2 \end{bmatrix} = \begin{bmatrix} -1 & 0 & 0 & 1 \\ 0 & 0 & 0 & 1 \\ 0 & -1 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & -1 \end{bmatrix} \begin{bmatrix} h_A \\ h_C \\ h_E \\ h_G \end{bmatrix} - \begin{bmatrix} \hat{r}_1 \\ \hat{r}_2 \\ \hat{r}_3 \\ \hat{r}_4 \end{bmatrix}$$

b)

$$\begin{bmatrix} 4.69 \\ 5.9967 \\ 6.1633 \\ 8.39 \end{bmatrix}$$

- Ingen facit

Facits til kursusgang 2

- Se næste afsnit
- Ingen facit
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$$Col(A) = span \left\{ \begin{bmatrix} 0 \\ 2 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}, \begin{bmatrix} 2 \\ 0 \\ 1 \end{bmatrix} \right\}$$

$$Row(A) = Col(A^T) = span \left\{ \begin{bmatrix} 1 \\ 0 \\ 0 \\ 0.5 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \end{bmatrix} \right\}$$

eller alternativt

$$Row(A) = Col(A^T) = span \left\{ \begin{bmatrix} 0 \\ 1 \\ 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ 0 \\ 2 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 1 \\ 1 \end{bmatrix} \right\}$$

$$Nul(A) = span \left\{ \begin{bmatrix} -0.5 \\ -1 \\ 0 \\ 1 \end{bmatrix} \right\}$$

$$Nul(A^T) = span \left\{ \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \right\}$$

Facits til kursugang 1

- $$\begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ -1 \\ 0 \end{bmatrix} + \begin{bmatrix} 0 \\ -2.5 \\ 0.5 \\ 1 \end{bmatrix} \cdot t$$

- a)

- b)
$$\begin{bmatrix} 1 & 1 \\ 2 & 1 \\ 3 & 1 \\ 4 & 1 \end{bmatrix} \cdot \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 2 \\ 2.5 \\ 4 \\ 4.5 \end{bmatrix}$$

- c)
$$A^T A = \begin{bmatrix} 30 & 10 \\ 10 & 4 \end{bmatrix}.$$

- d)
$$(A^T A)^{-1} A^T \mathbf{c} = \begin{bmatrix} 0.9 \\ 1 \end{bmatrix}$$

- $y = x^2 - 2x + 1$

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