

4.1: Finn alle løsninger til:

$$x + 2y - z = 3$$

$$2x + 3y - 3z = -1$$

$$-x + 2y + 3z = 1$$

Assosier matrise $A = \begin{bmatrix} 1 & 2 & -1 & 3 \\ 2 & 3 & -3 & -1 \\ -1 & 2 & 3 & 1 \end{bmatrix}$

>> rref(A)

ans =

$$\begin{array}{cccc} 1 & 0 & 0 & 25 \\ 0 & 1 & 0 & -5 \\ 0 & 0 & 1 & 12 \end{array}$$

$$x = 25, \quad y = -5, \quad z = 12.$$

②
$$\begin{array}{l} x - y + 2z = 3 \\ 2x - 2y = 4 \\ -3x + 2y + z = 0 \end{array}$$

$$A = \begin{bmatrix} 1 & -1 & 2 & 3 \\ 2 & -2 & 0 & 4 \\ -3 & 2 & 1 & 0 \end{bmatrix}$$

>> rref(A)

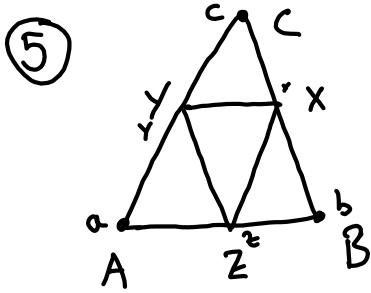
ans =

$$\begin{array}{cccc} 1.0000 & 0 & 0 & -3.5000 \\ 0 & 1.0000 & 0 & -5.5000 \\ 0 & 0 & 1.0000 & 0.5000 \end{array}$$

$$x = -3.5$$

$$y = -5.5$$

$$z = 0.5.$$



Vi har oppgitt temp.

a, b og c i A, B og C ,

og skal finne temp.

x, y, z i X, Y, Z ,

når temp. er gjennomsnittet av
temp. i nabopunkter.

$$x = \frac{1}{4}(b+c+y+z)$$

$$y = \frac{1}{4}(a+c+x+z)$$

$$z = \frac{1}{4}(a+b+x+y)$$

$$(i) \quad x - \frac{1}{4}y - \frac{1}{4}z = \frac{1}{4}(b+c)$$

$$(ii) \quad -\frac{1}{4}x + y - \frac{1}{4}z = \frac{1}{4}(a+c)$$

$$(iii) \quad -\frac{1}{4}x - \frac{1}{4}y + z = \frac{1}{4}(a+b)$$

$$A = \left[\begin{array}{ccc|c} 1 & -\frac{1}{4} & -\frac{1}{4} & \frac{1}{4}(b+c) \\ -\frac{1}{4} & 1 & -\frac{1}{4} & \frac{1}{4}(a+c) \\ -\frac{1}{4} & -\frac{1}{4} & 1 & \frac{1}{4}(a+b) \end{array} \right]$$

$\text{reg}(A)$ B $\underbrace{\qquad}_{\vec{c}}$

1 matrx $C = B^{-1} = \begin{bmatrix} 6/5 & 2/5 & 2/5 \\ 2/5 & 6/5 & 2/5 \\ 2/5 & 2/5 & 6/5 \end{bmatrix}$

løsning: $B^{-1}\vec{c}$