

## Facitliste til lektion 2

1.

$$\begin{aligned}\text{Col}A &= \text{span}\{(0, 2, 0), (1, 1, 2), (2, 0, 1)\} \\ \text{Row}A &= \text{span}\{(1, 0, 0, 0.83), (0, 1, 0, 0.33), (0, 0, 1, 0.33)\} \\ \text{Nul}A &= \text{span}\{(-0, 83, -0.33, -0.33, 1)\} \\ \text{Nul}A^\top &= \{(0, 0, 0)\}\end{aligned}$$

2.

$$U^\perp = \text{span}\{(-2, 1, 0), (1, 0, 1)\}$$

3. (a)

$$\begin{aligned}\text{Row}A &= \{(1, 0, 2), (0, 1, 2)\}, & \text{Nul}A &= \{(-2, -2, 1)\} \\ (1, 0, 2) \cdot (-2, -2, 1) &= 0, & (0, 1, 2) \cdot (-2, -2, 1) &= 0\end{aligned}$$

(b)

$$\begin{aligned}\hat{\mathbf{x}} &= (2, 2, -1) \\ \mathbf{z} &= (1, 1, 4)\end{aligned}$$

4. (a)

$$(1, 1, 2) \cdot (-1, -1, 1) = 0$$

(b)

$$\hat{\mathbf{x}} = (0.5, 0.5, 1)$$

(c)

$$\hat{\mathbf{y}} = (1, 1, 1)$$