

Inverse matrices und Additionen

Er A regulär? *Thuis ja, find A^{-1} !*

$$\left[\begin{array}{ccc|ccc} -1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 2 & -2 & 0 & 1 & 0 \\ 2 & -1 & -1 & 0 & 0 & 1 \end{array} \right]$$

$$\begin{array}{l} R_2 + R_1 \rightarrow R_2 \\ R_3 + 2R_1 \rightarrow R_3 \end{array} \rightarrow \left[\begin{array}{ccc|ccc} -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 2 & -1 & 1 & 1 & 0 \\ 0 & -1 & 1 & 2 & 0 & 1 \end{array} \right]$$

$$\begin{array}{l} R_3 + \frac{1}{2}R_2 \rightarrow R_3 \end{array} \rightarrow \left[\begin{array}{ccc|ccc} -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 2 & -1 & 1 & 1 & 0 \\ 0 & 0 & \frac{1}{2} & \frac{5}{2} & \frac{1}{2} & 1 \end{array} \right]$$

A er regulär da der er 3 pivot

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 Ist A regulär? Hvis ja, find A^{-1} .

$$\left[\begin{array}{ccc|ccc} -1 & 0 & 1 & 1 & 0 & 0 \\ 1 & 2 & -2 & 0 & 1 & 0 \\ 2 & -1 & -1 & 0 & 0 & 1 \end{array} \right]$$

$$\begin{array}{l} R_2 + R_1 \rightarrow R_2 \\ \longrightarrow \\ R_3 + 2R_1 \rightarrow R_3 \end{array} \left[\begin{array}{ccc|ccc} -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 2 & -1 & 1 & 1 & 0 \\ 0 & -1 & 1 & 2 & 0 & 1 \end{array} \right]$$

$$\begin{array}{l} R_3 + \frac{1}{2}R_2 \rightarrow R_3 \\ \longrightarrow \end{array} \left[\begin{array}{ccc|ccc} -1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 2 & -1 & 1 & 1 & 0 \\ 0 & 0 & \frac{1}{2} & \frac{5}{2} & \frac{1}{2} & 1 \end{array} \right]$$

A er regulær da der er 3 pivot

$$\begin{array}{l}
 -1R_1 \rightarrow R_1 \\
 \rightarrow \\
 \frac{1}{2}R_2 \rightarrow R_2 \\
 2R_3 \rightarrow R_3
 \end{array}
 \left[\begin{array}{ccc|ccc}
 1 & 0 & -1 & -1 & 0 & 0 \\
 0 & 1 & -\frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 0 \\
 0 & 0 & 1 & 5 & 1 & 2
 \end{array} \right]$$

$$\begin{array}{l}
 R_1 + R_3 \rightarrow R_1 \\
 R_2 + \frac{1}{2}R_3 \rightarrow R_2
 \end{array}
 \left[\begin{array}{ccc|ccc}
 1 & 0 & 0 & 4 & 1 & 2 \\
 0 & 1 & 0 & 3 & 1 & 1 \\
 0 & 0 & 1 & 5 & 1 & 2
 \end{array} \right]$$

$$\begin{array}{c}
 \nearrow \\
 A^{-1}
 \end{array}$$