

Oppgave 2

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

$$B = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 2 & 1 \\ 2 & 0 & 2 \end{bmatrix}$$

$$\det A = 1 \cdot ((3 \cdot 1) - (1 \cdot 1)) - 0 + 1 \cdot ((2 \cdot 1) - (3 \cdot 0)) \\ = 2 - 0 + 2 = \underline{\underline{4}}$$

$$\det B = 2 \cdot ((2 \cdot 2) - (1 \cdot 0)) - 0 + 1 \cdot ((2 \cdot 0) - (2 \cdot 2)) \\ = 8 - 0 + (-4) = \underline{\underline{4}}$$

a) $\det A = 4$, $\det B = 4$

$$C = \begin{bmatrix} 0 & 1 & 1 \\ 2 & 3 & 1 \\ 1 & 0 & 1 \end{bmatrix}, \det C = -\det A$$

$$D = \begin{bmatrix} 4 & 0 & 2 \\ 4 & 4 & 2 \\ 2 & 0 & 2 \end{bmatrix}, \det D = (2 \cdot 2) \det A = 4 \det A$$

$$\det(AB^T CD) = \det A \cdot \det B^T \cdot \det C \cdot \det D \\ = 4 \cdot \det B \cdot -4 \cdot 4 \cdot 4 \\ = 4 \cdot 4 \cdot -4 \cdot 4 \cdot 4 \\ = -(4^5) = \underline{\underline{-1024}}$$

b) $\det(AB^T CD) = -1024$