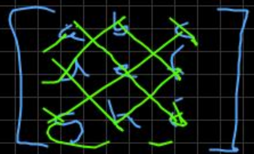
L 5 Determinant

$\det A = |A| = \det(A)$



$3 \times 2 \cdot 2 \times 1$

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

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

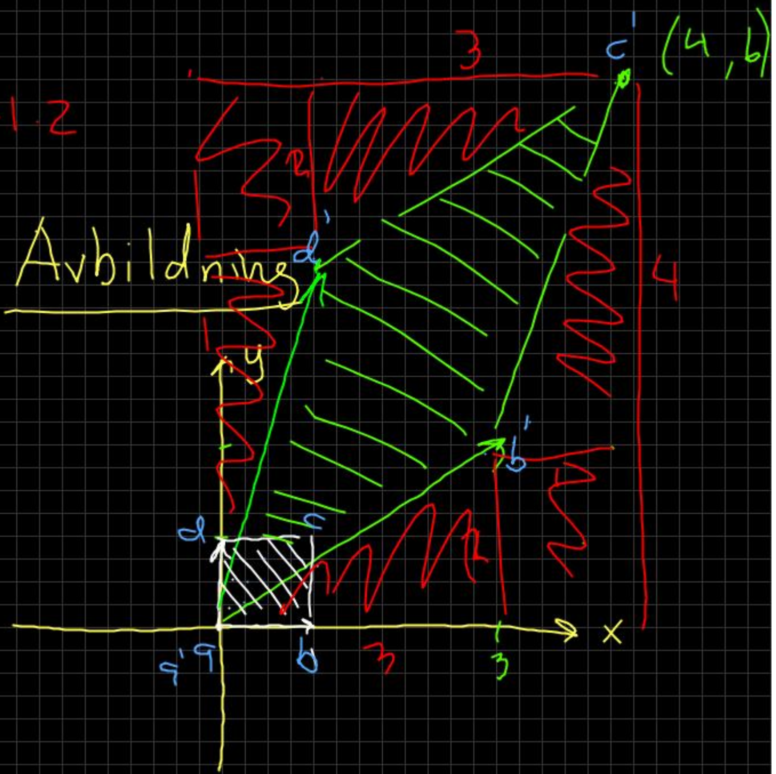
$A = 4 \cdot 6 - 3 \cdot 2 - 1 \cdot 4 - 1 \cdot 2 - 1 \cdot 2$

$= 24 - 6 - 4 - 2 - 2$

$= 10$ positivt

$\det = 0$ förlorar minst 1 dimension

Avbildning

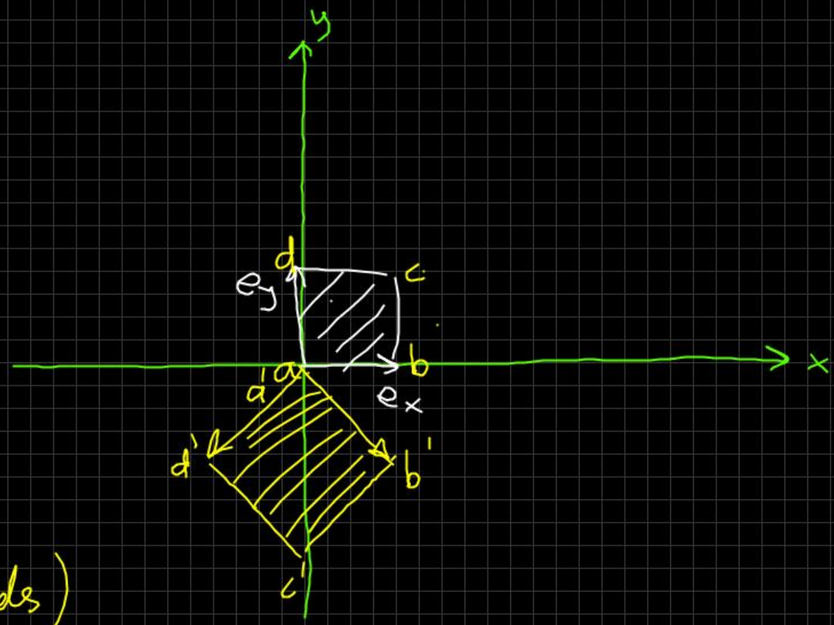


$$\begin{bmatrix} 1 & -1 \\ -1 & -1 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ -1 & -1 \end{bmatrix}$$

$$\det A = 1 \cdot (-1) - (-1) \cdot (-1) = -2$$

negativ

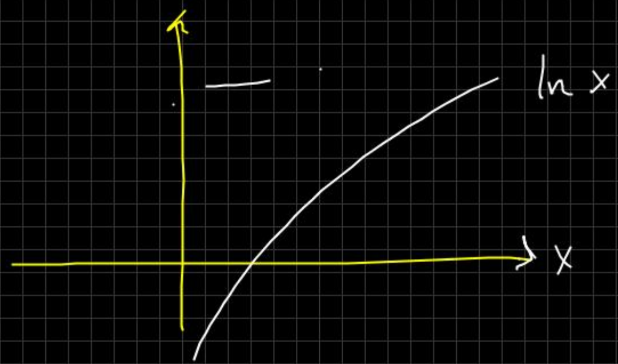
(orienteringen omvänds)



$$\int_1^\infty \frac{1}{x}\, dx$$

$$\lim_{b\to\infty} \int_1^b \frac{1}{x}\, dx = \lim_{b\to\infty} \Big[\ln x \Big]_1^b = \lim_{b\to\infty} \Big[(\ln b) - \underbrace{(\ln 1)}_{=0} \Big] =$$

$$= \lim_{b\to\infty} \ln b \to \infty$$



$$\int_1^\infty \frac{\ln x}{x^2}\,dx = \int_1^\infty \overset{f}{\ln x} \cdot \overset{g}{x^{-2}}\,dx$$

$$\lim_{b\to\infty} \int_1^b \ln x \cdot x^{-2}\,dx = \lim_{b\to\infty} \Big[\ln x \cdot (-x^{-1})\Big]_1^b - \lim_{b\to\infty} \int_1^b \frac{1}{x} \cdot (-x^{-1})\,dx$$

$$\lim_{b\to\infty} \left(\left(\frac{\ln b}{-b} \right) - \underbrace{\left(\frac{\ln 1}{-1} \right)}_{=0} \right) \quad \to 0$$

$$+ \lim_{b\to\infty} \int_1^b x^{-2}\,dx$$

$$\lim_{b\to\infty} \Big[-x^{-1}\Big]_1^b$$