

122 Nr. 5)

$$\begin{vmatrix} 2 & -4 & 3 & 4 \\ 1 & 2 & -2 & 3 \\ -3 & -5 & 1 & 1 \\ 4 & 2 & -1 & 3 \end{vmatrix} = \begin{vmatrix} 2 & -4 & -1 & 4 \\ 1 & 2 & 0 & 3 \\ -3 & -5 & -4 & 1 \\ 4 & 2 & 1 & 3 \end{vmatrix}$$

$$\begin{vmatrix} 2 & -4 & -1 & 4 \\ 1 & 2 & 0 & 3 \\ -3 & -5 & -4 & 1 \\ 6 & -2 & 0 & 7 \end{vmatrix} = -\frac{1}{4} \begin{vmatrix} -8 & +16 & 4 & -16 \\ 1 & 2 & 0 & 3 \\ -3 & -5 & -4 & 1 \\ 6 & -2 & 0 & 7 \end{vmatrix}$$

$$-\frac{1}{4} \cdot \begin{vmatrix} -11 & 11 & 0 & -15 \\ 1 & 2 & 0 & 3 \\ -3 & -5 & -4 & 1 \\ 6 & -2 & 0 & 7 \end{vmatrix} = -\frac{1}{4} \cdot (-4) \cdot A_{33}$$

$$= -\frac{1}{4} \cdot (-4) \cdot (-1)^6 \cdot D_{33}$$

$$\begin{vmatrix} -11 & 11 & -15 \\ 1 & 2 & 3 \\ 6 & -2 & 7 \end{vmatrix} = \begin{matrix} -154 + 198 + 30 & 74 \\ & \ominus \\ -180 + 77 + 66 & -37 \end{matrix} \\
 = \underline{\underline{111}}$$

c)
$$\begin{matrix} R_2 \\ R_3 \end{matrix} \begin{pmatrix} 1 & 0 & 2 & 1 & 2 \\ -2 & -3 & 0 & 2 & 3 \\ 0 & 1 & 0 & 0 & -1 \end{pmatrix} \begin{matrix} \\ \\ \end{matrix} \rightarrow \text{Det} = -4 \neq 0 \\
 \Rightarrow \text{Rang} = 3$$

S 127 Nr 10)

$$A = \begin{pmatrix} 2 & 4 & 4 \\ -1 & -3 & 0 \\ 1 & 2 & 1 \end{pmatrix} \Rightarrow \det A = \begin{vmatrix} -6+0 & -8 \\ 0 & -16 \\ -12 & -4+0 \end{vmatrix} = \begin{vmatrix} -6 & -8 \\ 0 & -16 \\ -12 & -4 \end{vmatrix} = \begin{vmatrix} -6 & -8 \\ -12 & -4 \end{vmatrix} = 24 - 96 = -72$$

$$A_{11} = -3$$

$$A_{12} = -(-1)$$

$$A_{13} = 1$$

$$A_{21} = +4$$

$$A_{22} = -2$$

$$A_{23} = 0$$

$$A_{31} = 12$$

$$A_{32} = -4$$

$$A_{33} = -2$$

$$\Rightarrow A^{-1} = \frac{1}{-72} \begin{pmatrix} -3 & 1 & 1 \\ 4 & -2 & 0 \\ 12 & -4 & -2 \end{pmatrix}^T = \frac{1}{-72} \begin{pmatrix} -3 & 4 & 12 \\ 1 & -2 & -4 \\ 1 & 0 & -2 \end{pmatrix}$$