

[13.0019]

$$1) \quad A^2 = \begin{pmatrix} 6 & 5 & 5 \\ 5 & 6 & 5 \\ 5 & 5 & 6 \end{pmatrix}$$

$$5A = \begin{pmatrix} 10 & 5 & 5 \\ 5 & 10 & 5 \\ 5 & 5 & 10 \end{pmatrix}$$

$$5A - 4I_3 = \begin{pmatrix} 6 & 5 & 5 \\ 5 & 6 & 5 \\ 5 & 5 & 6 \end{pmatrix} = A^2$$

$$2) \quad \text{On a } A^2 = 5A - 4I_3$$

$$\text{donc } A^2 - 5A = -4I_3$$

$$\text{d'où } A \cdot (A - 5I_3) = -4I_3$$

$$\text{Donc } A^{-1} = -\frac{1}{4} (A - 5I_3)$$

$$A^{-1} = -\frac{1}{4} \begin{pmatrix} 3 & -1 & -1 \\ -1 & 3 & -1 \\ -1 & -1 & 3 \end{pmatrix}$$