

Esercice 7:

$$1). A = \begin{pmatrix} 1 & 0 & 1 \\ 0 & -2 & 0 \\ 0 & 0 & 3 \end{pmatrix}$$

$$A^2 = \begin{pmatrix} 1 & 0 & 1 \\ 0 & -2 & 0 \\ 0 & 0 & 3 \end{pmatrix} \times \begin{pmatrix} 1 & 0 & 1 \\ 0 & -2 & 0 \\ 0 & 0 & 3 \end{pmatrix}$$

$$= \begin{pmatrix} 1 & 0 & 4 \\ 0 & 4 & 0 \\ 0 & 0 & 9 \end{pmatrix}$$

$$A^3 = A^2 \times A = \begin{pmatrix} 1 & 0 & 4 \\ 0 & 4 & 0 \\ 0 & 0 & 9 \end{pmatrix} \begin{pmatrix} 1 & 0 & 1 \\ 0 & -2 & 0 \\ 0 & 0 & 3 \end{pmatrix}$$

$$= \begin{pmatrix} 1 & 0 & 13 \\ 0 & -8 & 0 \\ 0 & 0 & 27 \end{pmatrix}$$

$$A^4 = A^3 \times A = \begin{pmatrix} 1 & 0 & 13 \\ 0 & -8 & 0 \\ 0 & 0 & 27 \end{pmatrix} \begin{pmatrix} 1 & 0 & 1 \\ 0 & -2 & 0 \\ 0 & 0 & 3 \end{pmatrix}$$

$$= \begin{pmatrix} 1 & 0 & 40 \\ 0 & 16 & 0 \\ 0 & 0 & 81 \end{pmatrix}$$