

$$7.4 \quad 1) \quad A = \begin{pmatrix} 0 & \frac{1}{3} & \frac{1}{4} & \frac{1}{3} & 0 \\ \frac{1}{3} & 0 & \frac{1}{4} & 0 & \frac{1}{3} \\ \frac{1}{3} & \frac{1}{3} & 0 & \frac{1}{3} & \frac{1}{3} \\ \frac{1}{3} & 0 & \frac{1}{4} & 0 & \frac{1}{3} \\ 0 & \frac{1}{3} & \frac{1}{4} & \frac{1}{3} & 0 \end{pmatrix} \quad \mathbf{v}_0 = \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}$$

$$2) \quad 1^{\text{er}} \text{ déplacement} : \mathbf{v}_1 = \begin{pmatrix} 0 & \frac{1}{3} & \frac{1}{4} & \frac{1}{3} & 0 \\ \frac{1}{3} & 0 & \frac{1}{4} & 0 & \frac{1}{3} \\ \frac{1}{3} & \frac{1}{3} & 0 & \frac{1}{3} & \frac{1}{3} \\ \frac{1}{3} & 0 & \frac{1}{4} & 0 & \frac{1}{3} \\ 0 & \frac{1}{3} & \frac{1}{4} & \frac{1}{3} & 0 \end{pmatrix} \begin{pmatrix} 0 \\ 1 \\ 0 \\ 0 \\ 0 \end{pmatrix} = \begin{pmatrix} \frac{1}{3} \\ 0 \\ \frac{1}{3} \\ 0 \\ \frac{1}{3} \end{pmatrix}$$

$$2^{\text{nd}} \text{ déplacement} : \mathbf{v}_2 = \begin{pmatrix} 0 & \frac{1}{3} & \frac{1}{4} & \frac{1}{3} & 0 \\ \frac{1}{3} & 0 & \frac{1}{4} & 0 & \frac{1}{3} \\ \frac{1}{3} & \frac{1}{3} & 0 & \frac{1}{3} & \frac{1}{3} \\ \frac{1}{3} & 0 & \frac{1}{4} & 0 & \frac{1}{3} \\ 0 & \frac{1}{3} & \frac{1}{4} & \frac{1}{3} & 0 \end{pmatrix} \begin{pmatrix} \frac{1}{3} \\ 0 \\ \frac{1}{3} \\ 0 \\ \frac{1}{3} \end{pmatrix} = \begin{pmatrix} \frac{1}{12} \\ \frac{11}{36} \\ \frac{2}{9} \\ \frac{11}{36} \\ \frac{1}{12} \end{pmatrix}$$