

## Trouver l'inverse des matrices élémentaires (p. 82)

$$\bullet E_{13} = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix} \sim E_{13}^{-1} = \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix} = E_{13}$$

$$\text{on a bien } \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix} \begin{pmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix} = \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$\bullet E_1(4) = \begin{pmatrix} 4 & 0 \\ 0 & 1 \end{pmatrix} \sim E_1(4)^{-1} = \begin{pmatrix} 1/4 & 0 \\ 0 & 1 \end{pmatrix} = E_1(1/4)$$

$$\bullet E_{23}(-\frac{1}{2}) = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & -1/2 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} \sim E_{23}(-\frac{1}{2})^{-1} = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 1/2 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix} = E_{23}(\frac{1}{2})$$