

Exercices p. 3 feuillet

1. Trouve l'inverse des matrices suivantes par la méthode échelonnée.

$$a) \begin{bmatrix} 3 & 7 \\ 5 & 4 \end{bmatrix} \quad \left[\begin{array}{cc|cc} 3 & 7 & 1 & 0 \\ 5 & 4 & 0 & 1 \end{array} \right]$$

$$\boxed{1} \times 5 - \boxed{2} \times 3 \quad \left[\begin{array}{cc|cc} 3 & 7 & 1 & 0 \\ 0 & 23 & 5 & -3 \end{array} \right]$$

$$\boxed{2} \div 23 \quad \left[\begin{array}{cc|cc} 3 & 7 & 1 & 0 \\ 0 & 1 & \frac{5}{23} & \frac{-3}{23} \end{array} \right]$$

$$\boxed{1} - \boxed{2} \times 7 \quad \left[\begin{array}{cc|cc} 3 & 0 & \frac{-12}{23} & \frac{21}{23} \\ 0 & 1 & \frac{5}{23} & \frac{-3}{23} \end{array} \right]$$

$$\boxed{1} \div 3 \quad \left[\begin{array}{cc|cc} 1 & 0 & \frac{-4}{23} & \frac{7}{23} \\ 0 & 1 & \frac{5}{23} & \frac{-3}{23} \end{array} \right]$$

$$c) \begin{bmatrix} 1 & 2 \\ 3 & -4 \end{bmatrix} \quad \left[\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 3 & -4 & 0 & 1 \end{array} \right]$$

$$\boxed{1} \times 3 - \boxed{2} \quad \left[\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 0 & 10 & 3 & -1 \end{array} \right]$$

$$\boxed{2} \div 10 \quad \left[\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 0 & 1 & \frac{3}{10} & \frac{-1}{10} \end{array} \right]$$

$$\boxed{1} - \boxed{2} \times 2 \quad \left[\begin{array}{cc|cc} 1 & 0 & \frac{2}{5} & \frac{1}{5} \\ 0 & 1 & \frac{3}{10} & \frac{-1}{10} \end{array} \right]$$

$$b) \begin{bmatrix} 5 & 3 \\ 3 & 2 \end{bmatrix} \quad \left[\begin{array}{cc|cc} 5 & 3 & 1 & 0 \\ 3 & 2 & 0 & 1 \end{array} \right]$$

$$\boxed{1} \times 3 - \boxed{2} \times 5 \quad \left[\begin{array}{cc|cc} 5 & 3 & 1 & 0 \\ 0 & -1 & 3 & -5 \end{array} \right]$$

$$\boxed{2} \div -1 \quad \left[\begin{array}{cc|cc} 5 & 3 & 1 & 0 \\ 0 & 1 & -3 & 5 \end{array} \right]$$

$$\boxed{1} - \boxed{2} \times 3 \quad \left[\begin{array}{cc|cc} 5 & 0 & 10 & -15 \\ 0 & 1 & -3 & 5 \end{array} \right]$$

$$\boxed{1} \div 5 \quad \left[\begin{array}{cc|cc} 1 & 0 & 2 & -3 \\ 0 & 1 & -3 & 5 \end{array} \right]$$