

7.4

$$1) \begin{cases} a_1 x + b_1 y = c_1 \\ a_2 x + b_2 y = c_2 \end{cases} \quad \left| \begin{array}{l} b_2 \\ -b_1 \end{array} \right.$$

$$\begin{cases} a_1 b_2 x + b_1 b_2 y = b_2 c_1 \\ -a_2 b_1 x - b_1 b_2 y = -b_1 c_2 \end{cases}$$

L'addition de ces deux équations donne :

$$a_1 b_2 x - a_2 b_1 x = b_2 c_1 - b_1 c_2$$

Si l'on met x en évidence, on obtient :

$$(a_1 b_2 - a_2 b_1) x = b_2 c_1 - b_1 c_2 \quad \text{c'est-à-dire} \quad \left| \begin{array}{cc} a_1 & b_1 \\ a_2 & b_2 \end{array} \right| x = \left| \begin{array}{cc} c_1 & b_1 \\ c_2 & b_2 \end{array} \right|$$

$$2) \begin{cases} a_1 x + b_1 y = c_1 \\ a_2 x + b_2 y = c_2 \end{cases} \quad \left| \begin{array}{l} -a_2 \\ a_1 \end{array} \right.$$

$$\begin{cases} -a_1 a_2 x - a_2 b_1 y = -a_2 c_1 \\ a_1 a_2 x + a_1 b_2 y = a_1 c_2 \end{cases}$$

L'addition de ces deux équations donne :

$$a_1 b_2 y - a_2 b_1 y = a_1 c_2 - a_2 c_1$$

Si l'on met y en évidence, on obtient :

$$(a_1 b_2 - a_2 b_1) y = a_1 c_2 - a_2 c_1 \quad \text{c'est-à-dire} \quad \left| \begin{array}{cc} a_1 & b_1 \\ a_2 & b_2 \end{array} \right| y = \left| \begin{array}{cc} a_1 & c_1 \\ a_2 & c_2 \end{array} \right|$$