

$$9(1) \left| \begin{array}{ccc|c} -1 & -1 & 2 & \\ 2 & 3 & -5 & \\ -2 & -3 & 3 & \end{array} \right|$$

$$= \left| \begin{array}{ccc|c} -1 & -1 & 2 & \\ 0 & 1 & -1 & \\ 0 & -1 & -1 & \end{array} \right|$$

$$= \left| \begin{array}{ccc|c} -1 & -1 & 2 & \\ 0 & 1 & -1 & \\ 0 & 0 & -2 & \end{array} \right|$$

$$= 2$$

$$(2) \left| \begin{array}{ccc|c} -5 & 2 & 1 & 5 \\ 2 & 4 & -3 & 4 \\ -3 & 4 & 2 & -1 \end{array} \right| \begin{array}{l} \textcircled{1} \\ \textcircled{2} \\ \textcircled{3} \end{array}$$

$$\left| \begin{array}{ccc|c} 4 & 6 & -7 & -2 \end{array} \right| \textcircled{4}$$

$$\left| \begin{array}{ccc|c} 2 & 4 & -3 & 4 \end{array} \right|$$

$$= \left| \begin{array}{ccc|c} 4 & 6 & -7 & -2 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} -3 & 4 & 2 & -1 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} -5 & 2 & 1 & 5 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 2 & 4 & -3 & 4 \end{array} \right|$$

$$= \left| \begin{array}{ccc|c} 0 & -2 & -1 & -10 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 0 & 10 & -\frac{5}{2} & 5 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 0 & 12 & -\frac{13}{2} & 15 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 2 & 4 & -3 & 4 \end{array} \right|$$

$$= \left| \begin{array}{ccc|c} 0 & -2 & -1 & -10 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 0 & 0 & -\frac{15}{2} & -45 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 0 & 0 & -\frac{25}{2} & -45 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 2 & 4 & -3 & 4 \end{array} \right|$$

$$= \left| \begin{array}{ccc|c} 0 & -2 & -1 & -10 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 0 & 0 & -\frac{15}{2} & -45 \end{array} \right|$$

$$\left| \begin{array}{ccc|c} 0 & 0 & 0 & 30 \end{array} \right|$$

$$= 900$$

①, ②

②, ④

行列

上三角

行列