行列式の計算 (アルゴリズム)

$2r + = 1r \times (-1), \quad 3r + = 1r \times \frac{2}{3}$

$$\begin{vmatrix} -3 & 4 & 5 \\ -3 & 4 & 2 \\ 2 & 5 & -4 \end{vmatrix} = \begin{vmatrix} -3 & 4 & 5 \\ 0 & 0 & -3 \\ 0 & \frac{23}{3} & -\frac{2}{3} \end{vmatrix} = - \begin{vmatrix} -3 & 4 & 5 \\ 0 & \frac{23}{3} & -\frac{2}{3} \\ 0 & 0 & -3 \end{vmatrix}$$

$2r \Longleftrightarrow 3r$

$$= - (-3) \cdot \frac{23}{3} \cdot (-3) = -69$$

公式

$$\begin{vmatrix} \alpha & * & * \\ 0 & \beta & * \\ 0 & 0 & \gamma \end{vmatrix} = \alpha \beta \gamma$$

$$= \alpha \begin{vmatrix} \beta & * \\ 0 & \gamma \end{vmatrix} = \alpha \beta \gamma.$$

$2r + = 1r \times (-\frac{3}{4}), \quad 3r + = 1r \times (-\frac{2}{4})$

$$\begin{vmatrix} -4 & -1 & 0 \\ -3 & 4 & -4 \\ -2 & 3 & 0 \end{vmatrix} = \begin{vmatrix} -4 & -1 & 0 \\ 0 & \frac{19}{4} & -4 \\ 0 & \frac{7}{2} & 0 \end{vmatrix} = \begin{vmatrix} -4 & -1 & 0 \\ 0 & \frac{19}{4} & -4 \\ 0 & 0 & \frac{56}{19} \end{vmatrix}$$

$3r + = 2r \times (-\frac{2}{38})$

$$= (-4) \cdot \frac{19}{4} \cdot \frac{56}{19} = -56$$