

代幾 I 計算演習 (2005/11/17) の解答

A.1

$$\begin{aligned} &= \begin{vmatrix} -3 & 0 & -2 \\ -3 & -2 & 0 \\ 1 & 1 & 0 \end{vmatrix} \times \begin{vmatrix} 4 & -5 \\ 0 & -2 \end{vmatrix} \times \begin{vmatrix} -3 & -1 & -1 \\ -1 & 1 & 1 \\ -1 & 0 & 2 \end{vmatrix} \\ &= 2 \times -8 \times -8 \\ &= 128 \end{aligned}$$

A.2

$$\begin{aligned} &= \begin{vmatrix} -2 & -3 & 2 \\ 2 & 2 & -1 \\ 0 & 2 & 2 \end{vmatrix} \times \begin{vmatrix} 0 & -1 & -2 \\ 0 & -1 & -3 \\ -3 & 2 & 1 \end{vmatrix} \times \begin{vmatrix} -2 & -5 \\ -4 & -2 \end{vmatrix} \\ &= 8 \times -3 \times -16 \\ &= 384 \end{aligned}$$

A.3

$$\begin{aligned} &= \begin{vmatrix} 2 & 1 & -1 \\ 0 & -1 & -2 \\ -3 & -3 & 0 \end{vmatrix} \times \begin{vmatrix} 0 & -1 & 2 \\ 0 & -3 & -3 \\ 1 & -2 & 0 \end{vmatrix} \times \begin{vmatrix} -6 \end{vmatrix} \\ &= -3 \times 9 \times -6 \\ &= 162 \end{aligned}$$

A.4

$$\begin{aligned} &= \begin{vmatrix} 0 & 1 & 1 \\ -3 & -2 & -2 \\ -1 & -1 & -2 \end{vmatrix} \times \begin{vmatrix} -3 & -4 \\ 2 & -2 \end{vmatrix} \\ &= -3 \times 14 \\ &= -42 \end{aligned}$$

A.5

$$\begin{aligned} &= \begin{vmatrix} -2 & 4 \\ 2 & -4 \end{vmatrix} \times \begin{vmatrix} 0 & -3 & 2 \\ 1 & -1 & 1 \\ -1 & 0 & -1 \end{vmatrix} \times \begin{vmatrix} 2 \end{vmatrix} \\ &= 0 \times -2 \times 2 \\ &= 0 \end{aligned}$$

A.6

$$\begin{aligned} &= \begin{vmatrix} 0 & 0 \\ -4 & 4 \end{vmatrix} \times \begin{vmatrix} 2 & 1 & -3 \\ -1 & 0 & -3 \\ 1 & 1 & 1 \end{vmatrix} \times \begin{vmatrix} -1 \end{vmatrix} \\ &= 0 \times 7 \times -1 \\ &= 0 \end{aligned}$$

A.7

$$\begin{aligned} &= \begin{vmatrix} -3 & 0 & 2 \\ 0 & -1 & -3 \\ -3 & 2 & -2 \end{vmatrix} \times \begin{vmatrix} 1 & 0 \\ 2 & -3 \end{vmatrix} \\ &= -30 \times -3 \\ &= 90 \end{aligned}$$

A.8

$$\begin{aligned} &= \begin{vmatrix} 2 & -1 & 0 \\ -1 & 1 & -2 \\ -1 & -2 & -3 \end{vmatrix} \times \begin{vmatrix} -3 & 1 & 1 \\ 1 & 1 & 1 \\ -1 & -1 & 2 \end{vmatrix} \\ &= -13 \times -12 \\ &= 156 \end{aligned}$$

A.9

$$\begin{aligned} &= \begin{vmatrix} 2 & -2 & -2 \\ 2 & 2 & 2 \\ -3 & -1 & -3 \end{vmatrix} \times \begin{vmatrix} 1 & -3 & -3 \\ 1 & -1 & 0 \\ 2 & -3 & -3 \end{vmatrix} \times \begin{vmatrix} -10 \end{vmatrix} \\ &= -16 \times -3 \times -10 \\ &= -480 \end{aligned}$$

A.10

$$\begin{aligned} &= \begin{vmatrix} -2 & 2 & -1 \\ -3 & -2 & 1 \\ 2 & -2 & -3 \end{vmatrix} \times \begin{vmatrix} -2 \end{vmatrix} \times \begin{vmatrix} 4 & -1 \\ 1 & -2 \end{vmatrix} \\ &= -40 \times -2 \times -7 \\ &= -560 \end{aligned}$$