

# 代幾 I 計算演習 [問題] (2007/12/20)

問. 次の行列の行列式を求めなさい

Q.1

$$\begin{vmatrix} 2 & 2 & 2 & -1 & -2 \\ -2 & -1 & -1 & 2 & 2 \\ -1 & 2 & -1 & -1 & 1 \\ 0 & -1 & -2 & -2 & 1 \\ 0 & -2 & 2 & -1 & 1 \end{vmatrix}$$

Q.2

$$\begin{vmatrix} 2 & -2 & 2 & 2 \\ -1 & 1 & -1 & 1 \\ 0 & 1 & 0 & -2 \\ 2 & -1 & 2 & 2 \end{vmatrix}$$

Q.3

$$\begin{vmatrix} -2 & -1 & -1 & -1 & 0 \\ 1 & 0 & -1 & -2 & 2 \\ 1 & 1 & -2 & 2 & 1 \\ 0 & -1 & 0 & -2 & 0 \\ 1 & -1 & -1 & 2 & -1 \end{vmatrix}$$

Q.4

$$\begin{vmatrix} -2 & 1 & 1 & 2 \\ 0 & 2 & 0 & 2 \\ -2 & 1 & -2 & 0 \\ 0 & 2 & 2 & 2 \end{vmatrix}$$

Q.5

$$\begin{vmatrix} -2 & 0 & 1 & -1 \\ -1 & -1 & -1 & 2 \\ -2 & -1 & -2 & 2 \\ 2 & -2 & 2 & -2 \end{vmatrix}$$

Q.6

$$\begin{vmatrix} -1 & 1 & 1 & 2 & 2 \\ 1 & 1 & 1 & 1 & 2 \\ -2 & 1 & -1 & -1 & 2 \\ 2 & -1 & -1 & 1 & 0 \\ 0 & 2 & -2 & 2 & -1 \end{vmatrix}$$

Q.7

$$\begin{vmatrix} 0 & 2 & 0 & 1 & 2 \\ 1 & -2 & -1 & 1 & -2 \\ 1 & -1 & -1 & 1 & -1 \\ -1 & 1 & -1 & -2 & 1 \\ 0 & 1 & -1 & 0 & -1 \end{vmatrix}$$

Q.8

$$\begin{vmatrix} 0 & -2 & 2 & -1 & 1 \\ 2 & 0 & -2 & 2 & -1 \\ 2 & -1 & 1 & -1 & -1 \\ 1 & 2 & 0 & -2 & -1 \\ -1 & 2 & -2 & 2 & 1 \end{vmatrix}$$

Q.9

$$\begin{vmatrix} 0 & 2 & 1 & 1 & -1 \\ -2 & 1 & -1 & -1 & 0 \\ 2 & -2 & 2 & -2 & -1 \\ -1 & -1 & -1 & 0 & -1 \\ 0 & 2 & 2 & 1 & 0 \end{vmatrix}$$

Q.10

$$\begin{vmatrix} 1 & 1 & -2 & 0 \\ 2 & -1 & 2 & 0 \\ 2 & -1 & -2 & -2 \\ 1 & -2 & 0 & -1 \end{vmatrix}$$

Q.11

$$\begin{vmatrix} 1 & -1 & 2 & 1 & -1 \\ 2 & 2 & 0 & 0 & 2 \\ 1 & -1 & -2 & 2 & -1 \\ -2 & 2 & -1 & -2 & -2 \\ -2 & -2 & 2 & 1 & 1 \end{vmatrix}$$

# 代幾 I 計算演習 [解答] (2007/12/20)

- A.1 
$$\begin{vmatrix} 2 & 2 & 2 & -1 & -2 \\ -2 & -1 & -1 & 2 & 2 \\ -1 & 2 & -1 & -1 & 1 \\ 0 & -1 & -2 & -2 & 1 \\ 0 & -2 & 2 & -1 & 1 \end{vmatrix} = -33$$
- A.2 
$$\begin{vmatrix} 2 & -2 & 2 & 2 \\ -1 & 1 & -1 & 1 \\ 0 & 1 & 0 & -2 \\ 2 & -1 & 2 & 2 \end{vmatrix} = 0$$
- A.3 
$$\begin{vmatrix} -2 & -1 & -1 & -1 & 0 \\ 1 & 0 & -1 & -2 & 2 \\ 1 & 1 & -2 & 2 & 1 \\ 0 & -1 & 0 & -2 & 0 \\ 1 & -1 & -1 & 2 & -1 \end{vmatrix} = -15$$
- A.4 
$$\begin{vmatrix} -2 & 1 & 1 & 2 \\ 0 & 2 & 0 & 2 \\ -2 & 1 & -2 & 0 \\ 0 & 2 & 2 & 2 \end{vmatrix} = -16$$
- A.5 
$$\begin{vmatrix} -2 & 0 & 1 & -1 \\ -1 & -1 & -1 & 2 \\ -2 & -1 & -2 & 2 \\ 2 & -2 & 2 & -2 \end{vmatrix} = 18$$
- A.6 
$$\begin{vmatrix} -1 & 1 & 1 & 2 & 2 \\ 1 & 1 & 1 & 1 & 2 \\ -2 & 1 & -1 & -1 & 2 \\ 2 & -1 & -1 & 1 & 0 \\ 0 & 2 & -2 & 2 & -1 \end{vmatrix} = -118$$
- A.7 
$$\begin{vmatrix} 0 & 2 & 0 & 1 & 2 \\ 1 & -2 & -1 & 1 & -2 \\ 1 & -1 & -1 & 1 & -1 \\ -1 & 1 & -1 & -2 & 1 \\ 0 & 1 & -1 & 0 & -1 \end{vmatrix} = -4$$
- A.8 
$$\begin{vmatrix} 0 & -2 & 2 & -1 & 1 \\ 2 & 0 & -2 & 2 & -1 \\ 2 & -1 & 1 & -1 & -1 \\ 1 & 2 & 0 & -2 & -1 \\ -1 & 2 & -2 & 2 & 1 \end{vmatrix} = -10$$
- A.9 
$$\begin{vmatrix} 0 & 2 & 1 & 1 & -1 \\ -2 & 1 & -1 & -1 & 0 \\ 2 & -2 & 2 & -2 & -1 \\ -1 & -1 & -1 & 0 & -1 \\ 0 & 2 & 2 & 1 & 0 \end{vmatrix} = 35$$
- A.10 
$$\begin{vmatrix} 1 & 1 & -2 & 0 \\ 2 & -1 & 2 & 0 \\ 2 & -1 & -2 & -2 \\ 1 & -2 & 0 & -1 \end{vmatrix} = 12$$
- A.11 
$$\begin{vmatrix} 1 & -1 & 2 & 1 & -1 \\ 2 & 2 & 0 & 0 & 2 \\ 1 & -1 & -2 & 2 & -1 \\ -2 & 2 & -1 & -2 & -2 \\ -2 & -2 & 2 & 1 & 1 \end{vmatrix} = -132$$