

P114 練13

$$\begin{aligned} \tilde{a}_{11} &= (-1)^{1+1} \begin{vmatrix} a_{22} & a_{23} \\ a_{32} & a_{33} \end{vmatrix} \\ &= a_{22}a_{33} - a_{23}a_{32} \end{aligned}$$

$$\begin{aligned} \tilde{a}_{13} &= (-1)^{1+3} \begin{vmatrix} a_{21} & a_{22} \\ a_{31} & a_{32} \end{vmatrix} \\ &= a_{21}a_{32} - a_{22}a_{31} \end{aligned}$$

中村学習塾

中村学習塾

P116 練14

$$(1) \begin{vmatrix} 2 & 1 & -4 \\ 4 & -1 & 2 \\ 3 & 5 & -3 \end{vmatrix} = a_{21}\tilde{a}_{21} + a_{22}\tilde{a}_{22} + a_{23}\tilde{a}_{23}$$

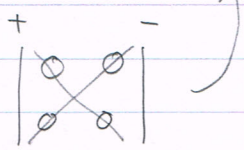
$$= -4 \begin{vmatrix} 1 & -4 \\ 5 & -3 \end{vmatrix} + (-1) \begin{vmatrix} 2 & -4 \\ 3 & -3 \end{vmatrix} - 2 \begin{vmatrix} 2 & 1 \\ 3 & 5 \end{vmatrix}$$

$$= -4(-3+20) - (-6+12) - 2(10-3)$$

$$= -4 \cdot 17 - 6 - 2 \cdot 7$$

$$= -68 - 6 - 14$$

$$= -88$$

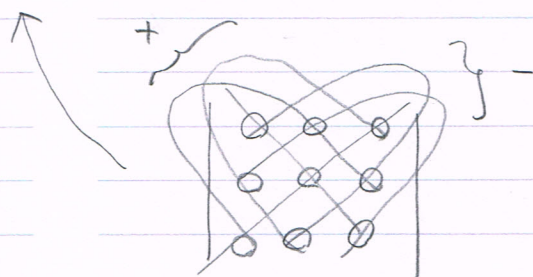


$$(2) \begin{vmatrix} 1 & 9 & -7 & 6 \\ 0 & 8 & 1 & 6 \\ 1 & 0 & -3 & 0 \\ 4 & -8 & 9 & 1 \end{vmatrix} = a_{14}\tilde{a}_{14} + a_{24}\tilde{a}_{24} + a_{34}\tilde{a}_{34} + a_{44}\tilde{a}_{44}$$

$$= -6 \begin{vmatrix} 0 & 8 & 1 \\ 1 & 0 & -3 \\ 4 & -8 & 9 \end{vmatrix} + 6 \begin{vmatrix} 1 & 9 & -7 \\ 1 & 0 & -3 \\ 4 & -8 & 9 \end{vmatrix}$$

$$= -6 \begin{vmatrix} 1 & 9 & -7 \\ 0 & 8 & 1 \\ 4 & -8 & 9 \end{vmatrix} + 6 \begin{vmatrix} 1 & 9 & -7 \\ 0 & 8 & 1 \\ 1 & 0 & -3 \end{vmatrix}$$

$$\begin{aligned} &= -6(-96 - 8 - 72) + 6(56 - 108 - 24 - 81) \\ &\quad + (-24 + 9 + 56) \\ &= 1056 - 942 + 41 \\ &= 155 \end{aligned}$$



P118 練15

$${}^tAA = E \text{ より}$$

$$|{}^tAA| = |E|$$

$$|{}^tA||A| = 1$$

$$|A| = |{}^tA| \text{ より}$$

$$|A||A| = 1$$

$$|A|^2 = 1$$

$$|A| = \pm 1$$

P118 練16

$$|P^{-1}AP| = |(P^{-1}A)P|$$

$$= |P^{-1}A||P|$$

$$= |P^{-1}||A||P| \quad \text{--- ①}$$

$$P \text{ が正則のとき } |P^{-1}| = \frac{1}{|P|} \text{ より}$$

①より

$$|P^{-1}AP| = \frac{1}{|P|} |A| |P|$$

$$= |A|$$

$$\therefore |P^{-1}AP| = |A|$$