$a \leftrightarrow \begin{pmatrix} \begin{array}{cc|cc} \textcircled{1} & -1 & 1 & -1 \\ -2 & 3 & -2 & 3 \\ \hline 1 & \textcircled{1} & 1 & -2 \\ -2 & -1 & 1 & -1 \end{array} \end{pmatrix} \begin{matrix} k=1 \\ \\ k=2 \end{matrix}$ найти a_{jk}^{ij} -?

$l=1 \qquad l=2$

$d_k^i = a_{jk}^{ij}$ $d_1^1 = a_{j1}^{1j} = a_{11}^{11} + a_{21}^{12} = 1 - 1 = 2$

$d_2^1 = a_{j2}^{1j} = a_{12}^{11} + a_{22}^{12} = 1 - 2 = -1$

$d_1^2 = a_{j1}^{2j} = a_{11}^{21} + a_{21}^{22} = -2 - 1 = -3$

$d_2^2 = a_{j2}^{2j} = a_{12}^{21} + a_{22}^{22} = -2 - 1 = -3$

$a_{jk}^{ij} \sim \begin{pmatrix} 2 & -1 \\ -3 & -3 \end{pmatrix}$

$a \sim \begin{pmatrix} \begin{array}{cc|cc} 1 & 0 & 1 & -2 \\ 1 & 1 & -2 & 5 \\ \hline 1 & -2 & 1 & -2 \\ -1 & 3 & -1 & 3 \end{array} \end{pmatrix} \begin{matrix} k=1 \\ \\ k=2 \end{matrix}$

$l=1 \qquad l=2$

a_{ij}^{ij} -?

$\varphi = a_{11}^{11} + a_{12}^{12} + a_{21}^{21} + a_{12}^{22} = 1 + 3 - 2 - 1 = 1$

$\cancel{a_{11}^{11} + a_{12}^{12}} (1 + l_2) = 7l_2$

$a_{21}^{21} + a_{22}^{22} \cancel{= 17 - 72}$

$\mathcal{A} = \mathcal{R}$

3)

$$a \sim \left\| \begin{array}{cc} \begin{vmatrix} 1 & 1 \\ 1 & 2 \end{vmatrix} & \begin{vmatrix} 1 & -1 \\ -2 & 3 \end{vmatrix} \end{array} \right\|$$

$$b \sim \left\| \begin{array}{cc} 1 & -2 \\ 1 & -1 \end{array} \right\|$$

$$a^i_{jk} \otimes b^l_m = \left\| \begin{array}{cc} \begin{vmatrix} \begin{array}{cc} 1 & 1 \\ 1 & 2 \end{array} & \begin{array}{cc} 1 & -1 \\ -2 & 3 \end{array} \\ \hline \begin{array}{cc} 1 & 1 \\ 1 & 2 \end{array} & \begin{array}{cc} 1 & -1 \\ -2 & 3 \end{array} \end{vmatrix} & \begin{vmatrix} \begin{array}{cc} -2 & -2 \\ -2 & -4 \end{array} & \begin{array}{cc} -2 & 2 \\ 4 & -6 \end{array} \\ \hline \begin{array}{cc} -1 & -1 \\ -1 & -2 \end{array} & \begin{array}{cc} -1 & 1 \\ 2 & -3 \end{array} \end{vmatrix} \end{array} \right\|$$

$$\underset{k=1 \quad k=2}{\underbrace{}} \qquad \underset{k=1 \quad k=1}{\underbrace{}}$$
$$\tau=1 \qquad\qquad \tau=2$$

$$a^i_{jk} \otimes b^j_m - ?$$

$$\sum_j \gamma^{ij}_{jk\tau} = \gamma^{i1}_{1k\tau} + \gamma^{i2}_{2k\tau} =$$

$$= \left\| \begin{vmatrix} 1 & 1 \\ 1 & -2 \end{vmatrix} \begin{vmatrix} -2 & -2 \\ -2 & 4 \end{vmatrix} \right\| + \left\| \begin{vmatrix} 1 & -1 \\ 2 & 3 \end{vmatrix} \begin{vmatrix} -1 & 1 \\ -2 & 3 \end{vmatrix} \right\| = \left\| \begin{array}{cc} 2 & 0 \\ 3 & 1 \end{array} \begin{array}{cc} -3 & -1 \\ -4 & 7 \end{array} \right\|$$

$$\left\| \begin{array}{cc} \begin{vmatrix} 1 & 1 \\ 1 & 2 \end{vmatrix} \begin{vmatrix} 1 & -1 \\ -2 & 3 \end{vmatrix} & \begin{vmatrix} -2 & -2 \\ -3 & -4 \end{vmatrix} \begin{vmatrix} -2 & 2 \\ 4 & -6 \end{vmatrix} \\ \hline \begin{vmatrix} 1 & 1 \\ 1 & 2 \end{vmatrix} \begin{vmatrix} 1 & -1 \\ -3 & 3 \end{vmatrix} & \begin{vmatrix} -1 & -1 \\ -3 & -2 \end{vmatrix} \begin{vmatrix} -1 & 1 \\ 2 & 3 \end{vmatrix} \end{array} \right\|$$

$$a^i_{jk} \otimes b^j_\tau \sim \left\| \begin{array}{cc} 2 & 0 \\ 3 & 1 \end{array} \begin{array}{cc} -3 & -1 \\ -4 & 1 \end{array} \right\|$$

$l_1^? = \beta_{11} + \beta_{21} = 1 + 1 = 2$

$l_2 = \beta_{12}^2 + \beta_{22}^2 = 0 + 1 = 1$

4) $\beta \sim \begin{pmatrix} 1 & 1 & | & 1 & 0 \\ 0 & 1 & | & 0 & 1 \end{pmatrix}$

$\beta_{ji}^i = \beta_{i1}^1 + \beta_{i2}^2 = \begin{pmatrix} 1 \\ 1 \end{pmatrix} + \begin{pmatrix} 0 \\ 1 \end{pmatrix} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$

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3) $\overset{k=1 \quad k=2}{a \sim \begin{pmatrix} 1 & 1 & | & 1 & -1 \\ 1 & 2 & | & -2 & 3 \end{pmatrix}}$

$b \sim \begin{pmatrix} 1 & -2 \\ 1 & -1 \end{pmatrix}$

$\lambda \sim \begin{pmatrix} 2 & -3 & | & 5 & -4 \\ 0 & -1 & | & 1 & 1 \end{pmatrix}$

$\left\| \begin{matrix} 2 & 0 & | & -3 & -1 \\ 0 & 3 & 1 & | & -4 & 1 \end{matrix} \right\|$

$a_{jk}^i \otimes b_i^j = \gamma_{jki}^{ij} = \lambda_{ki}^i$

$\lambda_{11}^1 = a_{11}^1 \cdot b_1^1 + a_{21}^1 \cdot b_1^2 = 1 \cdot 1 + 1 \cdot 1 = 2$

$\lambda_{12}^1 = a_{11}^1 \cdot b_2^1 + a_{21}^1 \cdot b_2^2 = 1 \cdot (-2) + 1 \cdot (-1) = -3$

$\lambda_{21}^1 = a_{12}^1 \cdot b_1^1 + a_{22}^1 \cdot b_1^2 = 1 \cdot 1 + (-1) \cdot 1 = 0$

$\lambda_{21}^1 = a_{12}^1 \cdot b_2^1 + a_{22}^1 \cdot b_2^2 = 1 \cdot (-2) + (-1) \cdot (-1) = -1$

$\lambda_{11}^2 = a_{11}^2 \cdot b_1^1 + a_{21}^2 \cdot b_1^2 = 1 \cdot 1 + 2 \cdot (-1) = 3$

$\lambda_{12}^2 = a_{11}^2 \cdot b_2^1 + a_{21}^2 \cdot b_2^2 = 1 \cdot (-2) + 2 \cdot (-1) = -4$

$\lambda_{21}^2 = a_{12}^2 \cdot b_1^1 + a_{22}^2 \cdot b_1^2 = -2 \cdot (1) + 3 \cdot 1 = 1$

$\lambda_{22}^2 = a_{12}^2 \cdot b_2^1 + a_{22}^2 \cdot b_2^2 = -2 \cdot (-1) + 3 \cdot (-1) = 1$