

$$\underline{2 \times 2} \quad \begin{pmatrix} x & y \\ u & v \end{pmatrix} \sim \begin{pmatrix} u & v \\ x & y \end{pmatrix} \quad \{1, 2\}, \{2, 1\}$$

$$I \sim \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$$

$$\begin{array}{c} P \\ \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} \end{array} \begin{pmatrix} x & y \\ u & v \end{pmatrix} = \begin{pmatrix} u & v \\ x & y \end{pmatrix}$$

$$\begin{pmatrix} x & y \\ u & v \end{pmatrix} \begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix} = \begin{pmatrix} y & x \\ v & u \end{pmatrix}$$

$$\underline{3 \times 3}$$

$$\{1, 2, 3\} \rightarrow \{1, 3, 2\}, (2, 1, 3)$$

$$(2, 3, 1) (3, 1, 2) (3, 2, 1)$$

$$6 = 3!$$

$$\underline{P} A_{(3 \times 3)} = \underline{(PI)} A \sim$$

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