

Examples - 1

①

1. Use Proc IML to solve the following

$$\text{Let } A = \begin{bmatrix} 2 & 6 \\ 3 & 1 \end{bmatrix} \text{ and } B = \begin{bmatrix} 3 & 5 \\ 2 & 1 \end{bmatrix}$$

Calculate $A+B$, $A-B$, AB , AB^{-1}

2. Let $A = \begin{bmatrix} 2 & 6 & 1 & 3 \\ 4 & 8 & 3 & 4 \\ 5 & 2 & 1 & 8 \\ 1 & 12 & 3 & -1 \end{bmatrix}$. Use Proc IML to show that $\text{rank}(A) = 3$.

Why is it not 4?

3. Solve $Ax = a$ for x where

$$A = \begin{bmatrix} 2 & 6 & 1 & 3 \\ 4 & 8 & 3 & 4 \\ 5 & 2 & 1 & 8 \\ 7 & 2 & 3 & 6 \end{bmatrix} \text{ and } a = \begin{bmatrix} 14 \\ 8 \\ 10 \\ 18 \end{bmatrix}$$

4. Generate A , a 4×4 matrix of uniform random numbers. Calculate the trace and the determinant of A .

5. For matrices in problem 1 (A and B) ②

find $A \otimes B$ and $B \otimes A$

① implies the Kronecker Product