Worksheet: Matrix Operations

ECON 441: Introduction to Mathematical Economics — Instructor: Div Bhagia

Exercise I.

$$A = \begin{bmatrix} 2 & 3 \\ 4 & -6 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 8 \\ -2 & 3 \end{bmatrix}$$

1. $A + B =$

2. $B + A =$

3. $A - B =$

4. $B - A =$

5. $2B =$

6. $B2 =$

$$A = \begin{bmatrix} 2 & 3 \\ 4 & -6 \end{bmatrix} \qquad B = \begin{bmatrix} 1 & 8 \\ -2 & 3 \end{bmatrix}$$

7. $A - 2B =$

8. $AB =$

9. $BA =$

Exercise II.

$$A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix}_{\_\times\_} \qquad B = \begin{bmatrix} b_{11} \\ b_{21} \end{bmatrix}_{\_\times\_}$$

Is it possible to find AB? If yes, solve for it. What is its dimension?

Is it possible to find BA? If yes, solve for it. What is its dimension?

Exercise III. A has 1 row and 2 columns and B has 2 rows and 3 columns.

1. What is the dimension of $C = AB$? Write down the expression for c_{12} in terms of elements of A and B denoted by a and b, respectively. Pay careful attention to the subscripts.

2. Now rewrite the above expression using summation notation.

3. Write expressions for c_{11} and c_{13} using summation notation as well.