Worksheet: Matrix Operations

ECON 441: Introduction to Mathematical Economics

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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. *B*2 =

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

7. A - 2B =

8. *AB* =

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.