

# Assignment 4

The purpose of this assignment is to understand matrix operations and to familiarize you with various forms of matrix operations, order of matrices, and dot operator.

## 1 Matrix Operations

State *True* or *False* on whether the following multiplication can be done. If it is true, write down the solution (Work this out! I want to see work on a separate sheet of paper.)

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$$x^{[1]} = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$$

$$y^{[1]} = \begin{bmatrix} 1 & 2 \\ 4 & 5 \\ 7 & 8 \end{bmatrix}$$

$$z^{[1]} = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$$

$$k^{[1]} = \begin{bmatrix} 9 & 8 & 7 \\ 6 & 5 & 4 \\ 3 & 2 & 1 \end{bmatrix}$$

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$$x - y \tag{1}$$

$$x' \tag{2}$$

$$\text{inv}(x) \tag{3}$$

$$x^{-1} \tag{4}$$

$$y' \tag{5}$$

$$k - z \tag{6}$$

$$\text{inv}(z) \tag{7}$$

$$k * z^{-1} \tag{8}$$

$$k/z \tag{9}$$

$$k./z \tag{10}$$

$$k.*z \tag{11}$$

$$x * y \tag{12}$$

$$y * x \tag{13}$$

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**Note:** Any sort of operations between two square matrices will always work. In addition, the order of matrix operations is also important.