

# Worksheet 1

Name: \_\_\_\_\_

Score: \_\_\_\_\_

Find a row echelon form and the reduced row echelon form (rref) of the following matrices:

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$$\left[ \begin{array}{ccc|c} -1 & -2 & 0 & 3 \\ 10 & 15 & 0 & -10 \\ 1 & 1 & 0 & 1 \end{array} \right]$$

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$$\left[ \begin{array}{ccc|c} 0 & 2 & 0 & -4 \\ 9 & 11 & -16 & 15 \\ 4 & 0 & -7 & 16 \end{array} \right]$$

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$$\left[ \begin{array}{cccc|c} -12 & 0 & -24 & 36 & 12 \\ 6 & 0 & 12 & -18 & -6 \end{array} \right]$$

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$$\left[ \begin{array}{ccccc|c} 0 & 1 & 0 & -3 & 5 & -5 \\ -4 & -2 & 0 & 18 & -26 & 22 \\ -8 & 0 & 1 & 25 & -37 & 20 \end{array} \right]$$

Find the general solution, i.e., all the solutions possible to each of the above linear systems of equations.

Find the products  $AB$  of each of the matrices. Is  $BA$  defined?

• Problem:

$$A = \begin{bmatrix} -4 & -1 & 4 \\ 4 & -1 & -2 \end{bmatrix} \quad B = \begin{bmatrix} 1 & 0 & -4 & 5 \\ 4 & -3 & -1 & -5 \\ 0 & 2 & -5 & -1 \end{bmatrix}$$

• Problem:

$$A = \begin{bmatrix} 4 & 5 \\ -3 & -2 \\ -3 & 1 \end{bmatrix} \quad B = \begin{bmatrix} 2 & -5 \\ -4 & 2 \end{bmatrix}$$

Find the products of the matrix  $A$  and the vector  $\vec{b}$

• Problem:

$$A = \begin{bmatrix} -1 & 0 \\ 4 & -4 \\ 3 & -2 \end{bmatrix} \quad \vec{b} = \begin{bmatrix} -2 \\ 2 \end{bmatrix}$$

• Problem:

$$A = \begin{bmatrix} 5 & 3 & 5 \\ 4 & 0 & -1 \end{bmatrix} \quad \vec{b} = \begin{bmatrix} -1 \\ -4 \\ 0 \end{bmatrix}$$