

# Precalculus

## 9-03 Matrix Operations

### Matrix addition and subtraction

- Both matrices must have same \_\_\_\_\_
- Add or subtract \_\_\_\_\_ elements

$$\begin{bmatrix} 3 & 1 \\ 0 & 2 \\ -4 & -1 \end{bmatrix} + \begin{bmatrix} 0 & -1 \\ -2 & -3 \\ -4 & -5 \end{bmatrix}$$

### Scalar multiplication

- Multiply a matrix with a \_\_\_\_\_
- \_\_\_\_\_

$$3 \begin{bmatrix} 1 & 2 & 3 \\ 0 & -1 & -2 \end{bmatrix}$$

### Matrix multiplication

- Number of \_\_\_\_\_ in 1st = number of \_\_\_\_\_ in 2nd  
 $(m \times n) \cdot (n \times p)$
- Order of product \_\_\_\_\_
- Order is \_\_\_\_\_
- **NO COMMUTATIVE PROPERTY!!!!**

$$\begin{bmatrix} 2 & -1 & 7 \\ 0 & 6 & -3 \end{bmatrix} \begin{bmatrix} 0 \\ -2 \\ 3 \end{bmatrix}$$

$$\begin{bmatrix} 2 & 0 \\ 1 & 3 \end{bmatrix} \begin{bmatrix} -1 & 0 & 4 \\ -2 & 1 & 2 \end{bmatrix}$$