

4.1 Matrices

Matrix

$$\begin{bmatrix} 3 & 1 \\ 2 & -4 \\ 5 & 6 \end{bmatrix}$$

Dimensions
Order

Rows x Columns
 3×2

$$a_{11} = 3$$

Row 1 Column 1

$$a_{21} = 2$$

$$\begin{bmatrix} 2 & 1 \\ -3 & 5 \end{bmatrix} = \begin{bmatrix} x & 1 \\ -3 & y+2 \end{bmatrix}$$

Solve for x and y

$$x = 2$$

$$y + 2 = 5$$

$$y = 3$$

$$\begin{aligned} 2x + 5y &= 8 \\ x - 3y &= 7 \end{aligned}$$

$$\left[\begin{array}{cc|c} 2 & 5 & 8 \\ 1 & -3 & 7 \end{array} \right] \quad \left[\begin{array}{cc|c} 1 & 0 & \# \\ 0 & 1 & \# \end{array} \right]$$

$$\begin{aligned} x + 4y - 5z &= 1 \\ 3x - 2y + 1z &= 6 \\ 7y + 9z &= -3 \end{aligned}$$

$$\left[\begin{array}{ccc|c} 1 & 4 & -5 & 1 \\ 3 & -2 & 1 & 6 \\ 0 & 7 & 9 & -3 \end{array} \right]$$

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

$$4A = \begin{bmatrix} 12 & 4 & -8 \\ 16 & 0 & -4 \end{bmatrix}$$

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

$$A = \begin{bmatrix} 5 & 1 \\ -2 & 6 \\ 3 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} 4 & 2 \\ -5 & -1 \\ 9 & 7 \end{bmatrix}$$

$$A+B = \begin{bmatrix} 9 & 3 \\ -7 & 5 \\ 12 & 7 \end{bmatrix}$$

$$B-A = \begin{bmatrix} -1 & 1 \\ -3 & -7 \\ 6 & 7 \end{bmatrix}$$

$$A-B = \begin{bmatrix} 1 & -1 \\ 3 & 7 \\ -6 & -7 \end{bmatrix}$$

$$A = \begin{bmatrix} 3 & 1 & 4 \\ -2 & 5 & 6 \end{bmatrix} \quad B = \begin{bmatrix} -4 & 0 & 7 \\ 9 & 2 & -5 \end{bmatrix}$$

$$2A + 3B$$

$$\begin{bmatrix} -6 & 2 & 29 \\ 23 & 16 & -3 \end{bmatrix}$$

$$p221 \quad 12-44E$$