

12-6-13

3rd Trig

$$\begin{bmatrix} 2 & 1 & 3 \\ 5 & 6 & -2 \end{bmatrix} \begin{array}{l} \text{2x3} \\ \text{or} \\ \text{3x2} \end{array}$$

RC cols

row
col

Easy to Add

$$\begin{bmatrix} 2 & 4 \\ 6 & 1 \end{bmatrix} + \begin{bmatrix} 1 & 1 \\ 4 & 10 \end{bmatrix} = \begin{bmatrix} 3 & 5 \\ 10 & 11 \end{bmatrix}$$

Multiply a digit through
the matrix

$$5 \begin{bmatrix} 1 & 2 & 6 \\ 1 & -1 & 0 \end{bmatrix} = \begin{bmatrix} 5 & 10 & 30 \\ 5 & -5 & 0 \end{bmatrix}$$

$$\begin{cases} 2x + 3y + 5z = 6 \\ x + y + z = 10 \\ -3x - y - 2z = -1 \end{cases}$$

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

$$\begin{bmatrix} 2 & 3 \\ 4 & 1 \end{bmatrix} \cdot \begin{bmatrix} 1 & 2 \\ 3 & 7 \end{bmatrix}$$

1st Row \cdot 1st Column

$$\begin{bmatrix} 2+9 & 4+21 \\ 4+3 & 8+7 \end{bmatrix} = \begin{bmatrix} 11 & 25 \\ 7 & 15 \end{bmatrix}$$

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

$$\begin{bmatrix} -1+0 & -2+9 \\ -2+0 & -4+15 \end{bmatrix} = \begin{bmatrix} -1 & 7 \\ -2 & 11 \end{bmatrix}$$

$$\begin{bmatrix} 0 & 2 \\ 3 & 1 \end{bmatrix} \cdot \begin{bmatrix} 3 & 4 \\ 5 & 6 \end{bmatrix}$$

$$\begin{bmatrix} 0+10 & 0+12 \\ 9+5 & 12+6 \end{bmatrix} = \begin{bmatrix} 10 & 12 \\ 14 & 18 \end{bmatrix}$$

Can't work

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

Size 2×3 2×2
Must be the same

Tell if the matrices can be multiplied and if so, what size is matrix answer.

$$\begin{array}{ll} A = 3 \times 5 & D = 2 \times 5 \\ B = 2 \times 3 & E = 3 \times 3 \\ C = 5 \times 2 & F = 3 \times 2 \end{array}$$

- ① $A \cdot C$ 3×5 5×2 ✓ 3×2
- ② $D \cdot F$ 2×5 3×2 ✗
- ③ $F \cdot D$ 3×2 2×5 ✓ 3×5
- ④ $C \cdot B$ 5×2 2×3 ✓ 5×3
- ⑤ $F \cdot E$ 3×2 3×3 ✗

$$\begin{bmatrix} 2 & 4 & 1 \end{bmatrix} \cdot \begin{bmatrix} 2 \\ 0 \\ 5 \end{bmatrix}$$

1×3 3×1

$$4+0+5$$

$$[9]$$

$$\begin{bmatrix} 2 \\ 0 \\ 5 \end{bmatrix} \cdot \begin{bmatrix} 2 & 4 & 1 \end{bmatrix}$$

3×1 1×3

$$\begin{bmatrix} 4 & 8 & 2 \\ 0 & 0 & 0 \end{bmatrix}$$

12-6-13
4th Trig

Matrices

$$\begin{bmatrix} 2 & 3 & 5 \\ 1 & 6 & 2 \end{bmatrix} \begin{array}{l} \text{2 x 3} \\ \text{or} \\ \text{3 x 2} \end{array}$$

rows
columns
cols

Adding

$$\begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix} + \begin{bmatrix} 1 & 1 \\ 5 & 0 \end{bmatrix} = \begin{bmatrix} 3 & 4 \\ 9 & 5 \end{bmatrix}$$

Multiply by single number

$$3 \begin{bmatrix} 2 & 1 & 5 \\ 0 & -1 & -8 \end{bmatrix} = \begin{bmatrix} 6 & 3 & 15 \\ 0 & -3 & -24 \end{bmatrix}$$

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

$$\begin{bmatrix} 10 + 18 & 2 + 6 \\ 5 + -6 & 1 + 2 \end{bmatrix} = \begin{bmatrix} 28 & 8 \\ -1 & -1 \end{bmatrix}$$

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

$$\begin{bmatrix} 6+1 & 4+1 \\ 15+6 & 10+6 \end{bmatrix} = \begin{bmatrix} 7 & 5 \\ 21 & 16 \end{bmatrix}$$

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

$$\begin{bmatrix} 6+3 & 2+12 \\ 15+0 & 5+0 \end{bmatrix} = \begin{bmatrix} 9 & 14 \\ 15 & 5 \end{bmatrix}$$

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

$$2 \times \boxed{3} \cdot \boxed{2} \times 2$$

Must match

Tell if the matrices can be multiplied and if so, what size is matrix answer.

$$\begin{array}{ll} A = 3 \times 5 & D = 2 \times 5 \\ B = 2 \times 3 & E = 3 \times 3 \\ C = 5 \times 2 & F = 3 \times 2 \end{array}$$

- ① $A \cdot E$ $3 \times \boxed{5} \cdot \boxed{3} \times 3$ No
- ② $B \cdot E$ $2 \times \boxed{3} \cdot \boxed{3} \times 3$ 2×3
- ③ $C \cdot D$ $5 \times \boxed{2} \cdot \boxed{2} \times 5$ 5×5
- ④ $D \cdot C$ $2 \times \boxed{5} \cdot \boxed{5} \times 2$ 2×2
- ⑤ $F \cdot F$ $3 \times \boxed{2} \cdot \boxed{3} \times 2$ No

$$\begin{matrix} [2 & 3 & 4] \\ 1 \times 3 \end{matrix} \cdot \begin{matrix} \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix} \\ 3 \times 1 \end{matrix}$$

$$2 + 6 + 0 \\ [8]$$

$$\begin{matrix} \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix} \\ 3 \times 1 \end{matrix} \cdot \begin{matrix} [2 & 3 & 4] \\ 1 \times 3 \end{matrix}$$

$$\begin{bmatrix} 2 & 3 & 4 \\ 4 & 6 & 8 \\ 0 & 0 & 0 \end{bmatrix}$$