

#First Computer Lab
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$2 + 2;$

4 (1)

$3 \cdot 5;$

15 (2)

$\frac{3^6 \cdot 5}{2}$

$\frac{3645}{2}$ (3)

$7 \cdot (9 + 11) ;$

$7 \cdot (9 + 11);$

140 (4)

$x + 2;$

$x + 2$ (5)

$x := 2;$

2 (6)

$x + 2;$

4 (7)

$v := \langle 1, 2, 3 \rangle;$

$\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ (8)

$w := \langle 1, 0, 0 \rangle;$

$\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}$ (9)

$v.w;$

1 (10)

$w.w;$

1 (11)

$M := \langle v|w|\langle 1, 1, 0 \rangle \rangle;$

$\begin{bmatrix} 1 & 1 & 1 \\ 2 & 0 & 1 \\ 3 & 0 & 0 \end{bmatrix}$ (12)

$M.M;$

$\begin{bmatrix} 6 & 1 & 2 \\ 5 & 2 & 2 \\ 3 & 3 & 3 \end{bmatrix}$ (13)

$M \cdot v$;

$$\begin{bmatrix} 6 \\ 5 \\ 3 \end{bmatrix} \quad (14)$$

$N := \langle \langle 1, 2, 3, 4 \rangle | \langle 5, 6, 7, 8 \rangle | \langle 9, 10, 11, 12 \rangle \rangle$;

$$\begin{bmatrix} 1 & 5 & 9 \\ 2 & 6 & 10 \\ 3 & 7 & 11 \\ 4 & 8 & 12 \end{bmatrix} \quad (15)$$

$N \cdot M$;

$$\begin{bmatrix} 38 & 1 & 6 \\ 44 & 2 & 8 \\ 50 & 3 & 10 \\ 56 & 4 & 12 \end{bmatrix} \quad (16)$$

$M \cdot N$;

Error, (in LinearAlgebra:-MatrixMatrixMultiply) first matrix column dimension (3) <> second matrix row dimension (4)

$P := \text{Matrix}([[1, 2, 3], [4, 5, 6], [7, 8, 9]])$;

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \quad (17)$$

$2 \cdot P$;

$$\begin{bmatrix} 2 & 4 & 6 \\ 8 & 10 & 12 \\ 14 & 16 & 18 \end{bmatrix} \quad (18)$$

$P - M$;

$$\begin{bmatrix} 0 & 1 & 2 \\ 2 & 5 & 5 \\ 4 & 8 & 9 \end{bmatrix} \quad (19)$$

$5 \cdot P - 3 \cdot M$;

$$\begin{bmatrix} 2 & 7 & 12 \\ 14 & 25 & 27 \\ 26 & 40 & 45 \end{bmatrix} \quad (20)$$

$2 + 2$;

$$4 \quad (21)$$

$$4 + 7; \quad 11 \quad (22)$$

$$\%; \quad 11 \quad (23)$$

$$\%\%\%; \quad 4 \quad (24)$$

$$\%\%; \quad 11 \quad (25)$$

$$A := \text{Matrix}([[a[1, 1], a[1, 2]], [a[2, 1], a[2, 2]]]);$$

$$\begin{bmatrix} a_{1,1} & a_{1,2} \\ a_{2,1} & a_{2,2} \end{bmatrix} \quad (26)$$

$$B := \text{Matrix}([[b[1, 1], b[1, 2]], [b[2, 1], b[2, 2]]]);$$

$$\begin{bmatrix} b_{1,1} & b_{1,2} \\ b_{2,1} & b_{2,2} \end{bmatrix} \quad (27)$$

$$C := \text{Matrix}([[c[1, 1], c[1, 2]], [c[2, 1], c[2, 2]]]);$$

$$\begin{bmatrix} c_{1,1} & c_{1,2} \\ c_{2,1} & c_{2,2} \end{bmatrix} \quad (28)$$

$$(A.B).C - A.(B.C); \quad (29)$$

$$\begin{aligned} & [[(a_{1,1}b_{1,1} + a_{1,2}b_{2,1})c_{1,1} + (a_{1,1}b_{1,2} + a_{1,2}b_{2,2})c_{2,1} - a_{1,1}(b_{1,1}c_{1,1} + b_{1,2}c_{2,1}) \\ & - a_{1,2}(b_{2,1}c_{1,1} + b_{2,2}c_{2,1}), (a_{1,1}b_{1,1} + a_{1,2}b_{2,1})c_{1,2} + (a_{1,1}b_{1,2} + a_{1,2}b_{2,2})c_{2,2} \\ & - a_{1,1}(b_{1,1}c_{1,2} + b_{1,2}c_{2,2}) - a_{1,2}(b_{2,1}c_{1,2} + b_{2,2}c_{2,2})], \\ & [(a_{2,1}b_{1,1} + a_{2,2}b_{2,1})c_{1,1} + (a_{2,1}b_{1,2} + a_{2,2}b_{2,2})c_{2,1} - a_{2,1}(b_{1,1}c_{1,1} + b_{1,2}c_{2,1}) \\ & - a_{2,2}(b_{2,1}c_{1,1} + b_{2,2}c_{2,1}), (a_{2,1}b_{1,1} + a_{2,2}b_{2,1})c_{1,2} + (a_{2,1}b_{1,2} + a_{2,2}b_{2,2})c_{2,2} \\ & - a_{2,1}(b_{1,1}c_{1,2} + b_{1,2}c_{2,2}) - a_{2,2}(b_{2,1}c_{1,2} + b_{2,2}c_{2,2})]] \end{aligned}$$

$$\text{simplify}(\%); \quad \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \quad (30)$$

$$Q := \text{Matrix}([[5, 3], [3, 2]]);$$

$$\begin{bmatrix} 5 & 3 \\ 3 & 2 \end{bmatrix} \quad (31)$$

$$Q^{(-1)};$$

$$\begin{bmatrix} 2 & -3 \\ -3 & 5 \end{bmatrix} \quad (32)$$

$$\frac{1}{Q};$$

$$\begin{bmatrix} 2 & -3 \\ -3 & 5 \end{bmatrix} \quad (33)$$

$$R := Q^{(-1)};$$

$$\begin{bmatrix} 2 & -3 \\ -3 & 5 \end{bmatrix} \quad (34)$$

$$Q.R;$$

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \quad (35)$$