Square Matrix Multiplication Quiz

let A and B be two square matrcies of 3×3.

$$A = \begin{bmatrix} 3 & 1 & 2 \\ -5 & 4 & 1 \\ 0 & 3 & -8 \end{bmatrix}$$

$$B = \begin{bmatrix} 0 & 5 & -1 \\ 3 & 2 & -1 \\ 10 & 0.5 & 4 \end{bmatrix}$$

(a) What is the value of element c_{23} of Matrix C where $C = A \times B$

(b) What is the value of element c_{23} of Matrix C where $C = B \times A$

Answer:

a. 5
b. 16

Notice that $A \times B \neq B \times A$ as element c_{23} in $A \times B$ is not the same as element c_{23} in $B \times A$.

Since $A \times B \neq B \times A$ we say they there are not **commutative**. This is a very interesting observation, as multiplication of scalars is definitely commutative.

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