

Matrix algebra – addition and multiplication

Exercise 2.10

Show that $A(BC) = (AB)C$ with:

$$A = \begin{pmatrix} 1 & 2 & -3 \\ 5 & 0 & 2 \\ 1 & -1 & 1 \end{pmatrix}, B = \begin{pmatrix} 3 & -1 & 2 \\ 4 & 2 & 5 \\ 2 & 0 & 3 \end{pmatrix}, C = \begin{pmatrix} 4 & 1 & 2 \\ 0 & 3 & 2 \\ 1 & -2 & 3 \end{pmatrix},$$

Solution Exercise 2.10

$$BC = \begin{pmatrix} 14 & -4 & 10 \\ 21 & 0 & 27 \\ 11 & -4 & 13 \end{pmatrix}$$

$$A(BC) = \begin{pmatrix} 23 & 8 & 25 \\ 92 & -28 & 76 \\ 4 & -8 & -4 \end{pmatrix}$$

$$AB = \begin{pmatrix} 5 & 3 & 3 \\ 19 & -5 & 16 \\ 1 & -3 & 0 \end{pmatrix}$$

$$(AB)C = \begin{pmatrix} 23 & 8 & 25 \\ 92 & -28 & 76 \\ 4 & -8 & -4 \end{pmatrix}$$

$$A(BC) = (AB)C$$