

Linear algebra, WNE, 2018/2019
meeting 11. – homework solutions

8 November 2018

1. Let $A = \begin{bmatrix} 1 & 0 \\ 3 & 1 \\ 1 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 3 & -1 & -2 & -1 \\ 1 & 20 & -1 & 2 & 0 \end{bmatrix}$ and $C = \begin{bmatrix} 1 & 0 & -2 & 1 & 2 \\ 0 & 0 & 1 & 3 & 1 \end{bmatrix}$. Calculate:

- $3AB$
- $A(B - 2C)$

$$3AB = 3 \cdot \begin{bmatrix} 0 & 3 & -1 & -2 & -1 \\ 1 & 29 & -4 & -4 & -3 \\ -1 & -17 & 0 & -4 & -1 \end{bmatrix} = \begin{bmatrix} 0 & 9 & -3 & -6 & -3 \\ 3 & 87 & -12 & -12 & -9 \\ -3 & -51 & 0 & -12 & -3 \end{bmatrix}$$

$$\begin{aligned} A(B - 2C) &= A \left(B - \begin{bmatrix} 2 & 0 & -4 & 2 & 4 \\ 0 & 0 & 2 & 6 & 2 \end{bmatrix} \right) = A \cdot \begin{bmatrix} -2 & 3 & 3 & -4 & -5 \\ 1 & 20 & -3 & -4 & -2 \end{bmatrix} = \\ &= \begin{bmatrix} -2 & 3 & 3 & -4 & -5 \\ -5 & 29 & 6 & -16 & -17 \\ -3 & -17 & 6 & 0 & -3 \end{bmatrix} \end{aligned}$$