

Esercizi sul prodotto tra matrici:

$$\begin{pmatrix} 1 & 2 \\ 0 & 1 \end{pmatrix} \begin{pmatrix} 1 & 0 \\ 0 & 3 \end{pmatrix} = \begin{pmatrix} 1 & 6 \\ 0 & 3 \end{pmatrix}$$

$$\begin{pmatrix} 4 \\ 1 \end{pmatrix} (1 \ 5) = \begin{pmatrix} 4 & 20 \\ 1 & 5 \end{pmatrix}$$

$$\begin{pmatrix} -2 \\ 3 \end{pmatrix} (1 \ 2 \ 4) = \begin{pmatrix} -2 & -4 & -8 \\ 3 & 6 & 12 \end{pmatrix}$$

$$\begin{pmatrix} -1 \\ 2 \\ 5 \end{pmatrix} (2 \ -3) = \begin{pmatrix} -2 & 3 \\ 4 & -6 \\ 10 & -15 \end{pmatrix}$$

$$(2 \ 3) \begin{pmatrix} -1 \\ 2 \end{pmatrix} = (4)$$

$$(0 \ 4) \begin{pmatrix} -1 & 5 \\ 2 & 1 \end{pmatrix} = (8 \ 4)$$

$$\begin{pmatrix} 1 & 3 \\ 0 & 4 \end{pmatrix} \begin{pmatrix} 2 \\ 5 \end{pmatrix} = \begin{pmatrix} 17 \\ 20 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 3 \\ 0 & 4 \end{pmatrix} \begin{pmatrix} a \\ b \end{pmatrix} = \begin{pmatrix} a + 3b \\ 4b \end{pmatrix}$$

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix} \begin{pmatrix} 3 \\ 5 \end{pmatrix} = \begin{pmatrix} 3a + 5b \\ 3c + 5d \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} 5 \\ 7 \end{pmatrix} = \begin{pmatrix} 5a_{11} + 7a_{12} \\ 5a_{21} + 7a_{22} \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix} \begin{pmatrix} x_1 \\ x_2 \end{pmatrix} = \begin{pmatrix} a_{11}x_1 + a_{12}x_2 \\ a_{21}x_1 + a_{22}x_2 \end{pmatrix}$$

$$(1 \ 3) \begin{pmatrix} 5 & 2 & 4 \\ 7 & 1 & 0 \end{pmatrix} = (26 \ 5 \ 4)$$

$$\begin{pmatrix} 3 & 0 \\ -1 & 2 \\ -1 & 2 \end{pmatrix} \begin{pmatrix} 1 \\ 4 \end{pmatrix} = \begin{pmatrix} 3 \\ 7 \\ 7 \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} a_{11}x + a_{12}y \\ a_{21}x + a_{22}y \\ a_{31}x + a_{32}y \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \\ a_{41} & a_{42} \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} a_{11}x + a_{12}y \\ a_{21}x + a_{22}y \\ a_{31}x + a_{32}y \\ a_{41}x + a_{42}y \end{pmatrix}$$

$$\begin{pmatrix} 2 & 0 \\ 1 & -2 \end{pmatrix} \begin{pmatrix} 3 & 1 & 2 \\ -4 & 1 & 3 \end{pmatrix} = \begin{pmatrix} 6 & 2 & 4 \\ 11 & -1 & -4 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 \\ -1 & 5 \\ 2 & 3 \end{pmatrix} \begin{pmatrix} 3 & 1 \\ -4 & 1 \end{pmatrix} = \begin{pmatrix} 3 & 1 \\ -23 & 4 \\ -6 & 5 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 & 2 \\ -1 & 5 & 4 \end{pmatrix} \begin{pmatrix} 3 \\ -4 \\ 2 \end{pmatrix} = \begin{pmatrix} 7 \\ -15 \end{pmatrix}$$

$$\begin{pmatrix} -1 & 4 & 5 \\ 1 & 0 & -2 \end{pmatrix} \begin{pmatrix} -3 & 2 \\ 4 & 1 \\ -2 & 0 \end{pmatrix} = \begin{pmatrix} 9 & 2 \\ 1 & 2 \end{pmatrix}$$

$$\begin{pmatrix} 2 & 0 & 1 \\ -1 & 1 & -2 \end{pmatrix} \begin{pmatrix} 3 & -3 & 1 \\ 2 & 3 & 0 \\ 0 & 3 & 1 \end{pmatrix} = \begin{pmatrix} 6 & -3 & 3 \\ -1 & 0 & -3 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 5 & 2 \\ -1 & 3 & 2 \\ -1 & 4 & 2 \end{pmatrix} \begin{pmatrix} -3 \\ 2 \\ 1 \end{pmatrix} = \begin{pmatrix} 9 \\ 11 \\ 13 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 5 & 2 \\ -1 & 3 & 2 \\ -1 & 4 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} x + 5y + 2z \\ -x + 3y + 2z \\ -x + 4y + 2z \end{pmatrix}$$

$$\begin{pmatrix} 1 & 5 & 2 \\ -1 & 0 & 2 \\ 0 & 4 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} x + 5y + 2z \\ -x + 2z \\ 4y + 2z \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} a_{11}x + a_{12}y + a_{13}z \\ a_{21}x + a_{22}y + a_{23}z \\ a_{31}x + a_{32}y + a_{33}z \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} 2 \\ 5 \\ 7 \end{pmatrix} = \begin{pmatrix} 2 \\ 5 \\ 7 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} x \\ y \\ z \end{pmatrix} = \begin{pmatrix} x \\ y \\ z \end{pmatrix}$$

$$\begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} \quad \begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix} = \begin{pmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{pmatrix}$$