

6.1) Introduction to matrices

Worked example

Write down the size of the matrix:

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$

$$\begin{pmatrix} 1 \\ 2 \end{pmatrix}$$

Your turn

Write down the size of the matrix:

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix}$$

2×3

$$\begin{pmatrix} 1 & 2 \end{pmatrix}$$

1×2

Worked example

Find (where possible):

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

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} + \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{pmatrix}$$

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

Your turn

Find (where possible):

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} + \begin{pmatrix} 0 & -2 & -3 \\ -4 & -4 & -6 \\ -7 & -8 & -8 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix} - \begin{pmatrix} 7 \\ 8 \\ 9 \end{pmatrix}$$

Not additively conformable

Worked example

Find:

$$5 \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$$

$$-7 \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{pmatrix}$$

Your turn

Find:

$$7 \begin{pmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{pmatrix}$$
$$\begin{pmatrix} 7 & 14 \\ 21 & 28 \\ 25 & 42 \end{pmatrix}$$

Worked example

Find the value of k :

$$\begin{pmatrix} -5 \\ 3k \end{pmatrix} + k \begin{pmatrix} 2k \\ 2k \end{pmatrix} = \begin{pmatrix} 3k \\ 20 \end{pmatrix}$$

Your turn

Find the value of k :

$$\begin{pmatrix} -3 \\ k \end{pmatrix} + k \begin{pmatrix} 2k \\ 2k \end{pmatrix} = \begin{pmatrix} k \\ 6 \end{pmatrix}$$

$$k = \frac{3}{2}$$

Worked example

Write down the 2×2 identity matrix

Write down the 3×3 identity matrix

Your turn

Write down the 4×4 identity matrix

$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$