



**Advanced Mathematics
Support Programme®**

Pairs of complex numbers

- Can you find some pairs of complex numbers **whose sum is a real number?**
- Can you find some pairs of complex numbers **whose product is a real number?**
- Can you find some pairs of complex numbers **whose product is a purely imaginary number?**

Linear Transformations

$$(x, y) \rightarrow (2x + 3y, x - 2y)$$

is a linear transformation in the x, y plane. It means, for example, that the point $(2, 1)$ is moved to $(7, 0)$

We can write this kind of transformation using matrices:

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

$$\text{e.g. } \begin{pmatrix} 2 & 3 \\ 1 & -2 \end{pmatrix} \begin{pmatrix} 2 \\ 1 \end{pmatrix} = \begin{pmatrix} 7 \\ 0 \end{pmatrix}$$

About the AMSP

- A government-funded initiative, managed by MEI, providing national support for teachers and students in all state-funded schools and colleges in England.
- It aims to increase participation in AS/A level Mathematics and Further Mathematics, and Core Maths, and improve the teaching of these qualifications.
- Additional support is given to those in priority areas to boost social mobility so that, whatever their gender, background or location, students can choose their best maths pathway post-16, and have access to high quality maths teaching.

Contact the AMSP



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