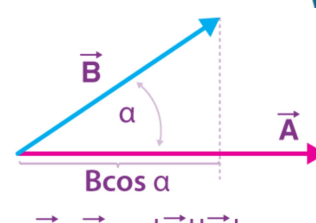


5. Volume of revolution

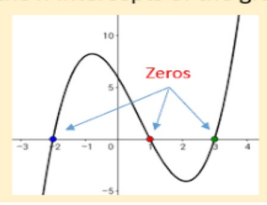
Vector Cross Product Formula


$$\vec{a} \times \vec{b} = |\vec{a}| |\vec{b}| \sin \theta \hat{n}$$
$$\vec{A} \cdot \vec{B} = |\vec{A}| |\vec{B}| \cos \alpha$$

9. Vectors

The Zeros or Roots of a Polynomial Function

Graphically: the real zeros or real roots of a polynomial function are the x-intercepts of the graph.



4. Roots of polynomials

Principle of Mathematical Induction

Step 1

Prove $P(1)$ is true

Step 2

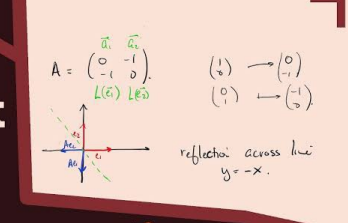
Assume $P(k)$ is true for some $n=k$

Step 3

Prove $P(k+1)$ is true

8. Proof by induction

the matrix for a linear transformation




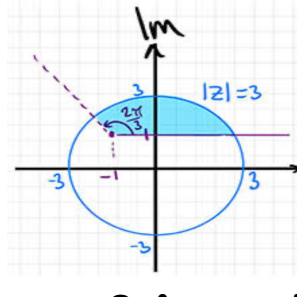
7. Linear transformations

Whole Number

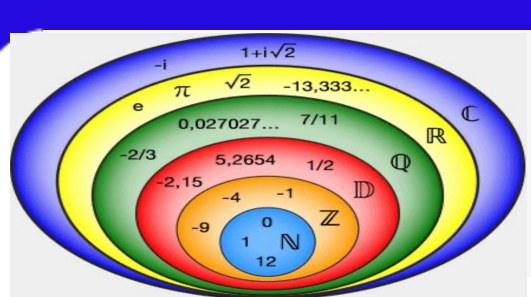
Sum of Natural Numbers Formula

$$\frac{[n(n+1)]}{2}$$

3. Series



2. Argand diagrams



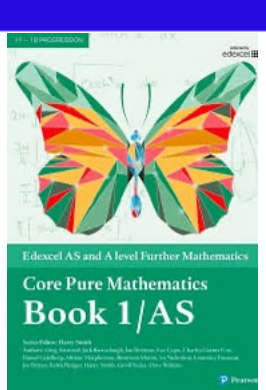
1. Complex numbers

A Matrix

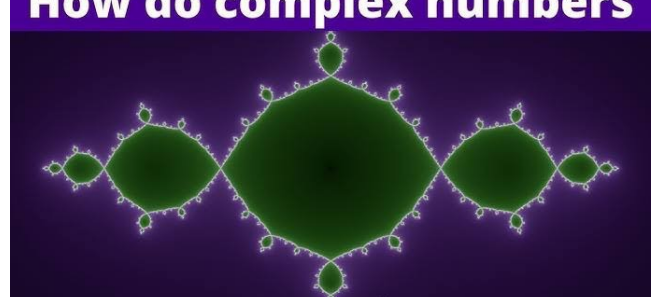
1	2	3
4	5	6
7	8	9

A matrix is simple. It's just a two dimensional array of numbers. The operations defined for matrices makes them special.

6. Matrices

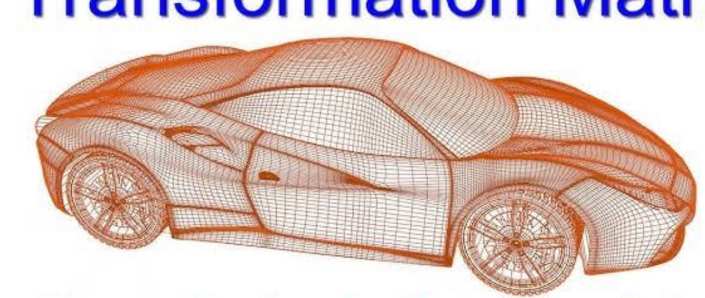


How do complex numbers



make this?

Transformation Matrices



Translate

$$\begin{bmatrix} 1 & 0 & x \\ 0 & 1 & y \\ 0 & 0 & 1 \end{bmatrix}$$

Scale

$$\begin{bmatrix} x & 0 & 0 \\ 0 & y & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Rotate

$$\begin{bmatrix} \cos \theta & -\sin \theta & 0 \\ \sin \theta & \cos \theta & 0 \\ 0 & 0 & 1 \end{bmatrix}$$