# A-LEVEL FURTHER MATHEMATICS

# $f(x) = \frac{1}{\sigma \sqrt{2\pi}} \exp\left(-\frac{(x-\mu)^2}{2\sigma^2}\right) \quad \mathcal{I} = \int_{a}^{b} f^2(x)$ $\forall \varepsilon > 0 \quad \exists N \in \mathbb{N} | \forall n > N | x_n - a| < \varepsilon$ $\sigma \quad \sinh(x) = \frac{e^x - e^{-x}}{2}$ $+ i \sin x \quad \int x^n dx = \frac{x^{n+1}}{n+1} + C \quad c \quad \forall A$ $\cos A = \cos B \cos C + \sin B \cdot \sin C \cos A$ $m) \quad \log(ab) = \log a + \log b \quad S = \ln R^2$ $V = \frac{u}{3} + R^3$ $V = \frac{u}{3} + R^3$ $(e^x)' = e^x$ $\int_{a}^{b} f(x)$ dents,or University if a gives you an

### WHY STUDY FURTHER MATHEMATICS AT A-LEVEL?

Studying A-Level Further Maths offers several significant benefits for students, including deepening understanding of advanced topics, prepares you for University if you intend to study degrees such as maths, physics and engineering and gives you an edge when making applications to both university and in employment

### **TOPICS STUIDED**

The Further Mathematics A-Level will extend pupils understanding of pure mathematics. Pupils have the option to choose 2 areas from Statistics, Mechanics or Decision Mathematics to continue their study of applied mathematics. The topics cover the following:

- Proof
- Further Vectors
- Complex Numbers
- Matrices
- Further Algebra and Functions
- Further Calculus
- Polar Co-ordinates
- Hyperbolic Functions
- Differential Equations

### **ASSESMENT STRUCTURE**

Students will follow the Edexcel Course and sit 4 exam papers at the end of Year 13

### PAPER 1

Further Pure Mathematics - 25%

### PAPER 2

Further Pure Mathematics - 25%

### PAPER 3

Further Applied Mathematics – 25%

### PAPER 4

Further Applied Mathematics – 25%



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# **ENTRY REQUIREMENTS**

Grade 8 in GCSE Mathematics

Students must be studying A-Level Mathematics

### **CAREER PATHWAY**

Further Mathematics enhances students' options at University and beyond, especially if planning to study Mathematics or Engineering.

The additional content explored in Further Mathematics is the ideal bridge between A-Level Mathematics and University education.

# IS THIS COURSE FOR ME?

Further Mathematics is a rewarding and stimulating course if you have a passion for mathematics. Having an additional A-Level is a powerful incentive but Further Mathematics is more challenging and broader than A-Level Mathematics so should only be considered by the most enthusiastic, resilient and able mathematicians.

# **NEED MORE INFORMATION?**

Please contact Mr S. Daniels, Subject Lead Maths sdaniels@lighthall.co.uk

# **Reading List**

- Bridging GCSE and A-Level Student Book (Collins)
- Towards Higher Mathematics: A companion by Richard Earl
- As Easy as Pi: Stuff about numbers that isn't (just) maths by Jamie Buchan

