

FURTHER MATHEMATICS

Edexcel A Level

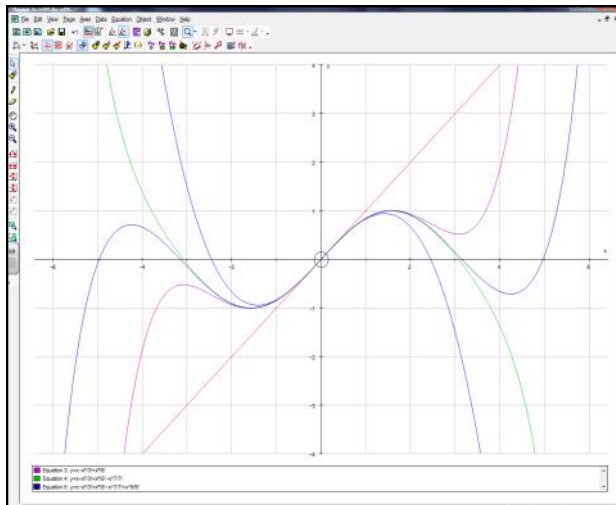
COURSE OVERVIEW

Further Mathematics is an A level in its own right.

You need to be studying Mathematics in order to study Further Mathematics. This is often called “Double Maths”.

It should only be studied by committed and talented mathematics students.

Further Mathematics A level develops and deepens your understanding of mathematics. You also study a wider variety of important topics such as complex numbers, hyperbolic functions, matrices, proof, Taylor Series (on the right is the series expansion of $\sin x$) and further calculus. You could also study further statistics or mechanics or both.



HOW WILL I BE ASSESSED?

There are four 1.5 hour examinations.

Further Pure Mathematics 1 & 2 (compulsory) and two others from Further Pure 3 & 4, Further Statistics 1 & 2, Further Mechanics 1 & 2.

The exact combination will depend on the group and their specific interests.

ENTRY REQUIREMENTS

You must have a Grade 8 in GCSE Mathematics or a high Grade 7 and the recommendation of your GCSE teacher.

32. E45.17) $T_n = \int \tan^n \theta \, d\theta$, $n \geq 2$.

Show $T_n = \frac{\tan^{n-1} \theta}{n-1} - T_{n-2}$

$$\begin{aligned}
 T_n &= \int \tan^n \theta \, d\theta \\
 &= \int \tan^{n-2} \theta \tan^2 \theta \, d\theta \\
 &= \int \tan^{n-2} \theta (\sec^2 \theta - 1) \, d\theta \\
 &= \int (\sec^2 \theta \tan^{n-2} \theta - \tan^{n-2} \theta) \, d\theta \\
 &= \int \sec^2 \theta \tan^{n-2} \theta \, d\theta - \int \tan^{n-2} \theta \, d\theta \\
 &= \int \sec^2 \theta \tan^{n-2} \theta \, d\theta - T_{n-2}
 \end{aligned}$$

$$\begin{aligned}
 \sec^2 \theta \cdot \tan^{n-2} \theta &= \frac{\sec^2 \theta \cdot \tan^{n-2} \theta}{\tan^2 \theta} = \frac{\sin^{n-2} \theta}{\cos^2 \theta \cos^{n-2} \theta} \\
 &= \frac{\sin^{n-2} \theta \cdot \cos^2 \theta}{\cos^2 \theta \cos^2 \theta \sin^{n-2} \theta} = \frac{\sin^{n-2} \theta}{\cos^2 \theta} \\
 &= \frac{\sin^{n-2} \theta}{\cos^2 \theta}
 \end{aligned}$$

WHY STUDY THIS SUBJECT?

Further Mathematics is a challenging but rewarding course aimed at committed and talented mathematicians. It enables you to study important mathematical concepts in greater depth. You should look at difficult mathematics, like that to the left, and want to know what it means!

If you are considering applying to study a degree such as mathematics, engineering, physics, computer science or a related discipline at a prestigious university then studying Further Mathematics will give you a distinct advantage. It will also better prepare you for the level of Maths you will encounter in your first year at university.

Students from the College who studied Further Maths have gone on to have jobs in robotics, actuarial analysis, astronomy and meteorology.

STUDENT EXPERIENCE

Further Maths has been a perfect choice for me because it has broadened and deepened my understanding of the subject and is excellent preparation for my chosen university course. It has enabled me to learn about more advanced and fascinating areas of maths like complex numbers and matrix algebra.

(Ben Year 13 student)

Further Information: Please see Mrs Martin or email smartin@st-anselms.com