Further Pure Mathematics with Technology (FPT)

Tom Button

FPT has been developed with the full support of OCR and Texas Instruments. MEI is very grateful for this support.

FPT is an optional A2 Further Pure unit that can be studied alongside (or after) FP2.

FPT will inform MEI’s approaches to the use of technology in future developments of A level.

FPT has been approved by Ofqual.

FPT: Development of the unit

FPT: Use of Technology

Students are expected to have access to software for the teaching, learning and assessment that features:
- Graph-plotter
- Spreadsheet
- Computer Algebra System (CAS)
- Programming Language

The expectation is that students will be using TI-Nspire software and teaching resources will be created to support this.

FPT: Computer Algebra Systems

CAS perform routine algebraic tasks such as solving equations, factorising, expand, differentiating and integrating.

Using CAS gives students access to more mathematics but creates challenges when assessing.

Show that $y = \frac{\sqrt{x} - 2}{\sqrt{x} - 4}$ has a minimum when $x = 0$

$f(z) = z^3 - (3 - 3i)z^2 - 6iz + 2 + i$

Solve $f(z) = 0$

Show that $f'(z) = 0$ has a repeated root.
FPT: Content

- **Investigations of Curves**
  Moved from FP2. The use of sliders and CAS enhances this topic.
- **Functions of Complex Variables**
  Using CAS to solve equations and differentiate/integrate. Spreadsheets can be used for iterations.
- **Number Theory**
  Basic programming to solve Number Theory problems.

FPT: Assessment

A timed written paper that assumes that students have access to the technology.

For the examination each student will need access to a computer with the software installed and no communication ability.

The first examination will be in June 2013.

FPT: Timeline and impact

- **Autumn 2011:** Development of the unit
- **Spring 2012:** Writing the specification and submission to Ofqual
- **Summer 2012:** Supporting teachers in developing technology skills
- **Autumn 2012:** Writing resources and supporting teachers in developing mathematical skills
- **Spring 2013:** First teaching

MEI would like to take the opportunity to embed the use of computer technology in mathematics and the development of FPT will inform this.

FPT: Further Information

Updates will appear on the MEI website and newsletters.

Centres are still welcome to express an interest in preparing students for the first examination in June 2013.

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