Personalised Learning Checklist

	R	A	G

MEI A Level Maths/Further Maths
Module FP2

1. Polar Coordinates

	R	A	G
Understand the meaning of polar co-ordinates (r, θ) and be able to convert from polar to cartesian co-ordinates and vice-versa.			
Be able to sketch curves with simple polar equations.			
Be able to find the area enclosed by a polar curve.			

2. Calculus

	R	A	G
Understand the definitions of inverse trigonometric functions.			
Be able to differentiate inverse trigonometric functions.			
Recognise integrals of functions of the form and and be able to integrate associated functions by using trigonometrical substitutions.			
Use trigonometric identities to integrate functions.			

3. Series

	R	A	G
Be able to find the Maclaurin series of a function, including the general term in simple cases.			
Appreciate that the series may converge only for a restricted set of values of x.			
Identify and be able to use the Maclaurin series of standard functions.			

4. Complex Numbers

	R	A	G
Understand the polar (modulus-argument) form of a complex number, and the definitions of modulus & argument.			
Be able to multiply and divide complex number in polar form.			
Understand de Moivre's theorem.			
Be able to apply de Moivre's theorem to finding multiple angle formulae and to summing suitable series.			

Understand the definition and hence the form			
Know that every non-zero complex number has n n^{th} roots			
Know that these n n^{th} roots are the vertices of a regular n-gon in the Argand diagram.			
Know that the distinct n^{th} roots of are for k = 0, 1,,,,n-1			
Be able to explain why the sum of all the nth roots is zero.			
Appreciate the effect in the Argand diagram of multiplication by a complex number.			
Be able to represent complex roots of unity on an Argand diagram.			
Be able to apply complex numbers to geometrical problems.			
5. Matrices			
Be able to find the determinant of any 3x3 matrix and the inverse of a non-singular 3x3 matrix.			
Understand the meaning of eigenvalue and eigenvector, and be able to find these for 2x2 or 3x3 matrices when possible.			
Be able to form the matrix of eigenvectors and use this to reduce a matrix to diagonal form.			
Be able to find powers of a 2x2 or 3x3 matrix.			
Be able to solve a matrix equation or the equivalent simultaneous equations, and to interpret the solution geometrically.			
Understand the term *characteristic equation* of a 2x2 or 3x3 matrix.			
Understand that every 2x2 or 3x3 matrix satisfies its own characteristic equation, and be able to use this.			
6. Hyperbolic Functions			
Understand the definitions of hyperbolic functions and be able to sketch their graphs.			
Be able to differentiate and integrate hyperbolic functions.			

Understand and be able to use the definitions of the inverse hyperbolic functions.

Be able to use the logarithmic forms of the inverse hyperbolic functions.

Be able to integrate   and   and related functions.