Personalised Learning Checklist

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MEI A Level Maths/Further Maths
Module FP1
1. Complex Numbers

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Be able to solve any quadratic equation with real coefficients.			
Understand the language of complex numbers.			
Be able to add, subtract, multiply and divide complex numbers given in the form: x + yj where x and y are real.			
Know that a complex number is zero if and only if both the real and imaginary parts are zero.			
Know that the complex roots of real polynomial equations with real coefficients occur in conjugate pairs.			
Be able to solve equations of higher degree with real coefficients in simple cases.			
Know how to represent complex numbers and their conjugates on an Argand diagram.			
Be able to represent the sum and difference of two complex numbers on an Argand diagram.			
Be able to represent a complex number in modulus-argument form.			
Be able to represent simple sets of complex numbers as loci in the Argand diagram.			
2. Matrices			
Be able to add, subtract and multiply conformable matrices, and to multiply a matrix by a scalar.			
Know the zero and identity matrices, and what is meant by equal matrices.			
Know that matrix multiplication is associative but not commutative.			
Be able to find the matrix associated with a linear transformation and vice-versa.			
Understand successive transformations and the connection with matrix multiplication.			

Understand the meaning of invariant points and lines of invariant points in a plane and how to find them.			
Be able to find the determinant of a 2x2 matrix.			
Know that the determinant gives the area scale factor of the transformation, and understand the significance of a zero determinant.			
Understand what is meant by an inverse matrix.			
Be able to find the inverse of a non-singular 2x2 matrix.			
Understand the product rule for inverse matrices.			
Know how to use matrices to solve linear equations.			
Be able to give a geometrical interpretation where the matrix is singular.(2 linear equations in 2 unknowns)			
3. Curve Sketching			
Be able to sketch the graph of y = f(x) obtaining information about symmetry, asymptotes parallel to the axes, intercepts with the co-ordinate axes, behaviour near x=0 and for numerically large x.			
Be able to ascertain the direction from which a curve approaches an asymptote.			
Be able to use a curve to solve an inequality.			
4. Proof			
Be able to use the terms *if*, *only if*, *necessary* and *sufficient* correctly in any appropriate context.			
Know the difference between an equation and an identity.			
Be able to find unknown constants in an identity.			
Be able to construct and present a correct proof using mathematical induction.			
5. Algebra			
Know the difference between a sequence and a series.			
Be able to sum a simple series.			

Know the meaning of the word *converge* when applied to either a sequence or a series.			
Be able to manipulate simple algebraic inequalities, to deduce the solution of such an inequality.			
Appreciate the relationship between the roots and coefficients of quadratic, cubic and quartic equations.			
Be able to form an equation whose roots relate to the roots of a given equation by a linear transformation.			