

<p><b>Module FP1.1</b> Summation of series Topic 2 4 hours</p>	<p><b>Content &amp; Page Reference FP1 textbook</b></p> <ul style="list-style-type: none"> <li>• Use the standard results for sum of <math>r</math>, sum of <math>r</math> squared and sum of <math>r</math> cubed to find related sums. <b>Ex 2A p26-27, Ex 2B p29.</b></li> <li>• Use the method of differences to obtain the sum of a finite series.</li> <li>• Recognise, by direct consideration of the sum to <math>n</math> terms, when a series is convergent, and find the sum to infinity in such cases. <b>Ex 2C p35</b></li> </ul>	<p><b>Teaching Time</b></p> <p>2 hours</p> <p>2 hours</p>
<p><b>Module FP1.2</b> Proof by Induction Topic 6 3 hours</p>	<ul style="list-style-type: none"> <li>• Use the method of mathematical induction to establish a given result (not restricted to summation of series).</li> <li>• Recognise situations where conjecture based on a limited trial followed by inductive proof is a useful strategy, and carry this out in simple cases. <b>Ex 6 p104-106</b></li> </ul>	<p>3 hours</p>
<p><b>Module FP1.3</b> Roots of polynomial equations Topic 8 4 hours</p>	<ul style="list-style-type: none"> <li>• Use the relations between the symmetric functions of the roots of polynomial equations and the coefficients (for equations of degree 2 or 3 only).</li> <li>• Use a given simple substitution to obtain an equation whose roots are related in a simple way to those of the original equation. <b>Ex 8A p133</b> <b>Ex 8B p135</b> <b>Ex 8C p140</b></li> </ul>	<p><b>Teaching Time</b></p> <p>1 hour</p> <p>1 hour</p> <p>2 hours</p>

<p><b>Module FP1.4</b> Complex Numbers Topic 7 Topic 9 7 hours</p>	<ul style="list-style-type: none"> <li>• Understand the idea of a complex number, recall the meaning of the terms ‘real part’, ‘imaginary part’, ‘modulus’, ‘argument’, ‘conjugate’, and use the fact that two complex numbers are equal if and only if both real and imaginary parts are equal.</li> <li>• Carry out operations of addition, subtraction, multiplication and division of two complex numbers expressed in Cartesian form (<math>x + iy</math>).</li> </ul> <p><b>Ex 7A p112</b></p> <ul style="list-style-type: none"> <li>• Use the result that, for a polynomial equation with real coefficients, any non-real roots occur in conjugate pairs.</li> </ul> <p><b>Ex 7B p115</b> <b>Ex 7C p121-122</b></p> <ul style="list-style-type: none"> <li>• Represent complex numbers geometrically by means of an Argand diagram, and understand the geometrical effects of conjugating a complex number and of adding and subtracting two complex numbers.</li> </ul> <p><b>Ex 7D p126-127</b></p> <ul style="list-style-type: none"> <li>• Find the two square roots of a complex number.</li> </ul> <p><b>Ex 7E p129</b></p> <ul style="list-style-type: none"> <li>• Illustrate simple equations and inequalities involving complex numbers by means of loci in an Argand diagram eg <math> z - a  &lt; k</math>, <math> z - a  =  z - b </math>, <math>\arg(z - a) = \alpha</math></li> </ul> <p><b>Ex 9A p147-148, Ex 9B p152</b></p>	<p>1 hour</p> <p>1 hour</p> <p>1 hour</p> <p>1 hour</p> <p>1 hour</p> <p>2 hours</p>
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<b>Module FP1.5</b>	<b>Content &amp; Page Reference FP1 textbook</b>	<b>Teaching Time</b>
Matrices Topic 1 Topic 3 Topic 5 Topic 10 20 hours	<ul style="list-style-type: none"> <li data-bbox="506 363 1665 435">• Carry out operations of matrix addition, subtraction and multiplication and recognise the terms null (or zero) matrix and identity (or unit) matrix.</li> </ul> <p data-bbox="506 435 695 467"><b>Ex 3A p44-45</b></p> <ul style="list-style-type: none"> <li data-bbox="506 467 1665 573">• Recall the meaning of the terms 'singular' or 'non singular' as applied to square matrices, and for 2 X 2 and 3 X 3 matrices, evaluate determinants and find inverses of non singular matrices.</li> </ul> <p data-bbox="506 573 653 605"><b>Ex 3B p50</b></p> <p data-bbox="506 605 653 638"><b>Ex 4B p58</b></p> <p data-bbox="506 638 653 670"><b>Ex 4C p64</b></p> <p data-bbox="506 670 684 703"><b>Ex 10C p164</b></p> <p data-bbox="506 703 684 735"><b>Ex 10D p170</b></p>	<p data-bbox="1694 435 1787 467">1 hour</p> <p data-bbox="1694 573 1797 605">2 hours</p> <p data-bbox="1694 605 1787 638">1 hour</p> <p data-bbox="1694 638 1787 670">1 hour</p> <p data-bbox="1694 670 1787 703">1 hour</p> <p data-bbox="1694 703 1797 735">2 hours</p>

	<ul style="list-style-type: none"> <li>• Understand and use the result, for non singular matrices, that <math>\text{inverse}(\mathbf{AB}) = \text{inverse}(\mathbf{B}) \times \text{inverse}(\mathbf{A})</math></li> <li>• Understand the use of 2 X 2 matrices to represent certain geometrical transformations in the x-y plane, and in particular <ul style="list-style-type: none"> <li>(i) recognise that the matrix product <math>\mathbf{AB}</math> represents the transformation that the results from the transformation represented by <math>\mathbf{B}</math> followed by the transformation represented by <math>\mathbf{A}</math>,</li> <li>(ii) recall how the area scale-factor of a transformation is related to the determinant of the corresponding matrix,</li> <li>(iii) find the matrix that represents a given transformation or sequence of transformations (understanding of terms 'rotation', 'reflection', 'enlargement', 'stretch' and 'shear' will be required.</li> </ul> </li> </ul> <p><b>Ex 5A p68-69</b>  <b>Ex 5B p72-73</b>  <b>Ex 5C p76-77</b>  <b>Ex 5D p82</b>  <b>Ex 5E p86-87</b>  <b>Ex 5F p91-92</b></p> <ul style="list-style-type: none"> <li>• Formulate a problem involving the solution of two linear simultaneous equations in two unknowns, or 3 equations in 3 unknowns, as a problem involving the solution of a matrix equation and vice-versa.</li> </ul> <p><b>Ex 10A p160</b></p> <ul style="list-style-type: none"> <li>• Understand the cases that may arise concerning the consistency or inconsistency of 2 or 3 linear simultaneous equations, relate them to the singularity or otherwise of the corresponding square matrix, and solve consistent equations.</li> </ul> <p><b>Ex 1A p12</b>  <b>Ex 1B p20-21</b></p>	<p>1 hour  1 hour  1 hour  2 hours  1 hour  2 hours</p> <p>1 hour</p> <p>1 hour  2 hours</p>
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