# IB Analysis and Approaches HL Yr 2 Subject Group Overview - Semester 1

<table>
<thead>
<tr>
<th>Unit Name</th>
<th>Topic 5 - Calculus</th>
<th>Topic 3 - Geometry and Trigonometry</th>
<th>Topic 1 - Numbers &amp; Algebra (finish during Sem 2)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time Frame</th>
<th>8 Weeks</th>
<th>7 Weeks</th>
<th>6 Weeks (con't 2nd semester)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards/IB Topics</td>
<td>Topic 5 – AHL 5.12 – 5.19; Review SL 5.1 - 5.11, Topic 1 – AHL 1.11</td>
<td>Topic 3 – AHL 3.9 – 3.18; Review SL 3.1 - 3.8</td>
<td>Topic 1 – AHL 1.12 – 1.16; Review SL 1.1 - 1.10</td>
</tr>
</tbody>
</table>
| Content Specific Information | ● Continuity & Differentiability  
● Limits, Definition of Derivative  
● Higher Derivatives  
● L’Hospital’s Rule/Maclaurin Series  
● Implicit Differentiation  
● Related Rates of Change  
● Optimization  
● Basic derivatives  
● Indefinite Integrals  
● Use of Partial Fractions  
● Integration by Substitution  
● Integration by Parts  
● Area of Region of a Graph  
● Volumes of Revolution  
● Differential Equations  
● Euler’s Method  
● Separation of Variables  
● Integrating Factors  
● Maclaurin Series  
● Partial Fractions  

Vector –  
● Basics, Vocabulary & Notation  
● Operations  
● Magnitude, Direction  
● Scalar Product  
● Angle b/t Vectors, Lines, Planes  
● Vector Equations  
● Applications  
● Parallel, Intersecting, Coincident, Skew Lines  
● Vector Products  

Trig Identities -  
● Reciprocal  
● Pythagorean  
● Compound Angle  
● Double Angle  
Inverse Trig Functions  
Relationships between functions & their graphs  

Complex Numbers –  
● Definition, format  
● Complex Plane  
● Polar Form  
● Euler Form  

Operations on  
● Complex Conjugates/Roots  
● DeMoivre’s Theorem  
● Powers and Roots  

Proofs –  
● Induction  
● Contradiction  

Counterexample  

Systems –  
● Solving  
● Unique, infinite, and no solution  

Common Assessments/Major Projects  
Formative Assessments  
Summative Assessment – Unit 1 Test Pt. 1, Unit 1 Test Pt. 2  

Formative Assessments  
Summative Assessment – Unit 2 Test - Vectors  
Unit 2 Test - Vectors and Trig  

Formative Assessments  
Summative Assessment – Unit 3 Test  

Resources  
Textbook – Ch. 4, 7, 8  
IB QuestionBank  

Textbook - Mathematics: Analysis and Approaches HL (Oxford, 2019) – Ch. 9; Sections 6.1 – 6.4  
IB QuestionBank  

IB QuestionBank  

Published: August, 2023  
Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.
<table>
<thead>
<tr>
<th>Unit Name</th>
<th>Topic 2 - Functions</th>
<th>Topic 4 - Statistics</th>
<th>IB Exam Review</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time Frame</td>
<td>3 weeks</td>
<td>3 Weeks</td>
<td>4 Weeks</td>
</tr>
<tr>
<td>Content Specific Information</td>
<td>Polynomial Functions</td>
<td>Review of Integrals</td>
<td>Bayes Theorem</td>
</tr>
<tr>
<td></td>
<td>● Graphs &amp; equations</td>
<td>Variance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Solutions &amp; Factors</td>
<td>Probability density functions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Sum and Product of Roots</td>
<td>Mean variance &amp; standard deviation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other Functions:</td>
<td>The effect of linear transformations of X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Rational Functions, Partial Fractions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Odd/Even Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Function Inverses, Domain Restrictions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Solutions to ( g(x) \geq f(x) )</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Graphs of ( y =</td>
<td>f(x)</td>
<td>), ( y = f(</td>
</tr>
<tr>
<td>Common Assessments / Major Projects</td>
<td>Formative Assessment – Polynomial Functions</td>
<td>Formative Assessment</td>
<td>Mock Exam</td>
</tr>
<tr>
<td></td>
<td>Other Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Summative Assessment – Unit 4 Test</td>
<td>Summative Assessment – Unit 5 Test</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IB QuestionBank</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Published: August, 2023
Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.