IB AA HL Y2 Planner – Unit 4 - Topic 2 - Functions

Teacher(s)	Joanna Smith	Subject group and course	Mathematics – Analysis and Approaches		
Course part and topic	Unit 4 Functions Topic 2: AHL 2.12 - 2.16 Review SL Topics (2.1 - 2.11)	SL or HL/Year 1 or 2	HL, Yr 2	Dates	Feb/March

Unit description and texts	DP assessment(s) for unit
Functions allow us to represent patterns, show equivalencies and make generalizations which enable us to model real-world situations.. Text – Oxford Mathematics Analysis and Approaches HL (Ch. 2, Ch. 3)	Topic 2 Assessment Questions for the cumulative assessments come from released questions in the IB Question bank. Each summative assessment is cumulative with the majority (60-75%) of the test coming from the content covered between summative assessments. Content will also include daily warmup topics from the time period between assessments (review of SL topics)

INQUIRY: establishing the purpose of the unit

Transfer goals
List here one to three big, overarching, long-term goals for this unit. Transfer goals are the major goals that ask students to "transfer" or apply, their knowledge, skills, and concepts at the end of the unit under new/different circumstances, and on their own without scaffolding from the teacher.
Students should be able to: Represent real world situations visually (graphically) and solve problems based on the characteristics of the functions.

ACTION: teaching and learning through inquiry

Content/skills/concepts—essential understandings	Learning process - *Check the boxes for any pedagogical approaches used during the unit. Aim for a variety of approaches to help facilitate learning.*
Students will know the following content: ● De'Moive's Theorem ● Finding solutions to functions graphically ● Notation for transformations ● Formula for sum/product of roots of a polynomial function ● Factor and remainder theorems ● Finding key characteristics of a rational function from this equation ● Recognize odd/even functions by symmetry and relationship between f(x) and -f(x) Students will develop the following skills: ● Utilize transformation notation to transform functions ● Use the formula for sum/product of roots to find missing roots. ● Use synthetic/long division, remainder theorem, and/or factor theorem to verify and find roots or factors of a polynomial. ● Graphing a rational function based on its characteristics ● Determine self-inversing functions ● Solving inequalities graphically and algebraically Students will grasp the following concepts: ● Extending results from a specific case to a general form can allow us to apply them to a larger system. ● Patterns can be identified in behaviours which can give us insight into appropriate strategies to model or solve them. ● The intersection of a system of equations may be represented graphically and algebraically and represents the solution that satisfies the equations.	Learning experiences and strategies/planning for self-supporting learning: ☒ Lecture ☐ Socratic seminar ☒ Small group/pair work ☐ PowerPoint lecture/notes ☒ Individual presentations ☐ Group presentations ☐ Student lecture/leading ☐ Interdisciplinary learning Details: Most lessons will start with direct instruction and introduction from the instructor. Students will work in small groups to solve problems and complete explorations – some will be consistent across groups, some will be unique allowing for each group/individual to have time to present their work. Discussions regarding method, alternate approaches, and efficiency will be regularly included in the class. In this unit students will create a short presentation related to a transformation from standard AHL 2.16 to teach this standard to the class. ☐ Other/s:

	Formative assessment:
	Lesson textbook problems
	Content specific IB Question bank practice
	Summative assessment: Topic 2 Assessment
	Questions for the cumulative assessments come from released questions in the IB Question bank. Each summative assessment is cumulative with the majority (60-75%) of the test coming from the content covered between summative assessments. Content will also include daily warmup topics from the time period between assessments (review of SL topics)
	Differentiation:
	☐Affirm identity
	☒Value prior knowledge
	☐Scaffold learning
	☒ Extend learning
	Details:
	This unit will expand students' prior knowledge of functions, characteristics, and solving equations. Students will extend learning by making connections between algebraic solutions/methods and function characteristics.

Approaches to learning (ATL)

Check the boxes for any explicit approaches to learning connections made during the unit. For more information on ATL, please see the guide.

☒ Thinking

☒ Social

☒ Communication

☒ Self-management

☒ Research

Details:

Thinking - making connections within the content and applications

Social – partner work; pair presentations on AHL 2.16

Communication – utilizing the language and notation of mathematics; pair presentations on AHL 2.16

Self- Management - pair presentations on AHL 2.16; managing homework practice/prioritizing work across their classes at the end of the semester.

Research - pair presentations on AHL 2.16

Language and learning	TOK connections	CAS connections
Check the boxes for any explicit language and learning connections made during the unit. For more information on the IB's approach to language and learning, please see the guide.	Check the boxes for any explicit TOK connections made during the unit	Check the boxes for any explicit CAS connections. If you check any of the boxes, provide a brief note in the "details" section explaining how students engaged in CAS for this unit.
☒ Activating background knowledge ☐ Scaffolding for new learning ☒ Acquisition of new learning through practice ☐ Demonstrating proficiency Details: Students will use the language of mathematics in connection to prior knowledge of functions and solving equations. Students will learn new vocabulary, formats and notation and gain mastery of them through practice.	☐ Personal and shared knowledge ☐ Ways of knowing ☒ Areas of knowledge ☐ The knowledge framework Details: Is it an oversimplification to say that some areas of knowledge give us facts whereas other areas of knowledge give us interpretations? Does studying the graph of a function contain the same level of mathematical rigour as studying the function algebraically? What are the advantages and disadvantages of having different forms and symbolic language in mathematics?	☐ Creativity ☐ Activity ☐ Service Details: N/A

Resources

List and attach (if applicable) any resources used in this unit

Textbook - Mathematics: Analysis and Approaches HL (Oxford – 2019)
IB Question Bank

Stage 3: Reflection—considering the planning, process and impact of the inquiry

What worked well	What didn't work well	Notes/changes/suggestions:
List the portions of the unit (content, assessment, planning) that were successful	*List the portions of the unit (content, assessment, planning) that were not as successful as hoped*	*List any notes, suggestions, or considerations for the future teaching of this unit*