IB DP IB Mathematics Analysis and approaches SL 2022 (IB1)

Summary

SL Chapter 12 - Trigonometric functions

Subject	Year	Start date	Duration
Mathematics: analysis and approaches	IB1	Week 1, December	3 weeks

Course Part

Description

In this unit you will explore radian measure and using trigonometric identities and functions in real-life contexts.

Inquiry & Purpose

Inquiry / Higher Order Questions

Type	Inquiry Questions
Concept-based	Why do we use radians as a unit of measure?
Concept-based	How do you prove the double angle identities?

Curriculum

Aims

Independently and collaboratively extend their understanding of mathematics.

Objectives

Reasoning: Construct mathematical arguments through use of precise statements, logical deduction and inference and by the manipulation of mathematical expressions.

Syllabus Content

Topic 3: Geometry and trigonometry

SL Content

SL 3.4

The circle: radian measure of angles; length of an arc; area of a sector.

SL 3.5

Definition of $\cos\theta, \sin\theta$ in terms of the unit circle.

Definition of $\tan\theta$ as $\frac{\sin\theta}{\cos\theta}$.

Exact values of trigonometric ratios of $0, \frac{\pi}{6}, \frac{\pi}{4}, \frac{\pi}{3}, \frac{\pi}{2}$ and their multiples.

Extension of the sine rule to the ambiguous case.

SL 3.6

The Pythagorean identity $\cos^2\theta + \sin^2\theta = 1$. Double angle identities for sine and cosine.

The relationship between trigonometric ratios.

SL 3.7

The circular functions $\sin x, \cos x, \text{ and } \tan x$; amplitude, their periodic nature, and their graphs

Composite functions of the form $f(x) = a\sin(b(x+c)) + d$

Transformations.

Real-life contexts.

SL 3.8

Solving trigonometric equations in a finite interval, both graphically and analytically.

Equations leading to quadratic equations in $\sin x, \cos x \text{ or } \tan x$

ATL Skills

Approaches to Learning

Thinking

- In this unit, we will

ask students to formulate a reasoned argument to support their opinion or conclusion

reward a new personal understanding, solution or approach to an issue

set students a task which required higher-order thinking skills (such as analysis or evaluation)

ask questions that required the use of knowledge from a different subject from the one you are teaching

Developing IB Learners

Learner Profile

Inquirers

IB DP IB Mathematics Analysis and approaches SL 2022 (IB1)

Knowledgeable

Thinkers

Reflective