HPISD Curriculum: Multivariable Calculus

Title	Estimated Duration	6 Weeks			
Unit 4: Multiple Integrals	6 weeks			**4**	5	6

Unit Overview

The students will be able to solve Multiple Integrals

Enduring Understandings

The student will understand that:	Calculus can be used in solving Multiple Integrals

Concepts	**Guiding/Essential Questions**
	How do you solve a double integral?
	What real world applications involve double integrals?
	How do you solve triple integrals?
	What real world applications involve triple integrals?

Learning Targets

In three-dimensional space, students will be able to :
- Define the double integral and compute double integrals.
- Evaluate double integrals using polar coordinates.
- Define and evaluate triple integrals.
- Evaluate triple integrals using spherical coordinates.
- Solve problems involving change of variables for double and triple integrals.
- Solve applications of double integrals; surface area.

Formative Assessments	**Summative Assessments**
Homework, Quizzes	Tests and Projects

Processes and Skills: What students should be able to DO	Facts: What students should KNOW
- Compute double integrals. - Evaluate double integrals using polar coordinates. - Evaluate triple integrals. - Evaluate triple integrals using spherical coordinates. - Solve problems involving change of variables for double and triple integrals. - Solve applications of double integrals; surface area.	- Define the double integral. - Understand double integrals using polar coordinates. - Define triple integrals. - Understand triple integrals using spherical coordinates. - Understand problems involving change of variables for double and triple integrals. - Understand applications of double integrals; surface area.

Topics

double integrals	double integrals in polar coordinates	change of variables
iterated Integrals	triple integrals	surface area
double Integrals over a general region	triple integrals in cylindrical and spherical coordinates	

Language of Instruction

derivatives	iterated integral	cylindrical coordinates
integral	polar coordinate	spherical coordinates
double integral	triple integral	

Resources

Calculus Textbook: Anton