Cornwall-Lebanon School District Curriculum Overview

Honors Calculus – High School

length of time in weeks	Concepts & Competencies	Common Assessments	Academic Standards (PA Core if applicable)
Unit 1 1	<u>Pre-Requisites</u> Students will graph piecewise functions. Students will evaluate functions graphically and algebraically. Students will factor and solve quadratic functions. Students will simplify and solve equations involving rational exponents. Students will use the difference quotient.	≻ Review Packet	
Unit 2 4	<u>Limits and Discontinuity</u> Students will evaluate limits graphically and algebraically. Students will determine the continuous nature of functions and write functions that change discontinuous functions into continuous ones. Students will evaluate limits at points of discontinuity and when approaching infinity.	 Quiz: Limits Quiz: Continuity Test: Limits and Continuity Exam 	EU 1.1 EU 1.2
Unit 3 9	<u>Differentiation</u> Students will use the limit definition to find the derivative. Students will calculate derivatives and higher order derivatives. Students will write equations of tangent and normal lines. Students will determine velocity, acceleration, and other rates of change. Students will determine the derivative of implicit functions and solve problems involving rates of change.	 Quiz: Derivative Definition Quiz: Derivative Shortcut Rules Test: Marking Period Exam Quiz: Chain Rule and Trig Derivatives Quiz: Implicit Differentiation Quiz: Related Rates Test: Derivatives 	EU 2.1 EU 2.3
Unit 4 7	<u>Derivative Applications</u> Students will use the derivative to analyze properties of a function. Students will apply the mean value theorem to describe the behavior of a function. Students will solve problems involving optimization.	 Quiz: Minima and Maxima Quiz: Using the Derivative to Graph Optimization Quiz Optimization Project Test: Curve Sketching Exam 	EU 2.2 EU 2.4

Unit 5	Integration	Quiz: Antiderivatives	EU 3.1
6	Students will determine the anti-derivative of a function	Quiz: Basic Integration	EU 3.2
	and use the anti-derivative to write the initial function.	Quiz: U-Substitution	EU 3.3
	Students will use the fundamental theorem of calculus to	Quiz: Integration by Parts	EU 3.4
	evaluate definite integrals. Students will use u-substitution	Test: Marking Period Exam	EU 3.5
	and integration by parts to evaluate the anti-derivative of		
	functions. Students will use the rectangular approximation		
	method and integration to find the area under a curve.		
Unit 6 📃 🧰	Applications of Integration	Quiz: Area Between Two Curves	EU 5.1
7	Students will use integrals to calculate the area between	Quiz: Volume using Disk/Washer Method	EU 5.2
	two curves. Students will find the volume of a solid formed	Quiz: Any Axis of Revolution	EU 5.3
	by revolving an area a solid around an axis. Students will	Quiz: Arc Length and Surface Area	
	determine the arc length and surface are of a function.	Quiz: Work – Force	
	Students will use integration to determine the work done	Test: Unit 6 Exam	
	by a variable force.		