

Curriculum Map

Content Area: Calculus

	Content	Skills	Benchmarks	Essential Questions
September	<ul style="list-style-type: none"> Functions and graphs Slope of curves 	<ul style="list-style-type: none"> Rate of change of a function Increments Slope of linear equations and curves 	<ul style="list-style-type: none"> I-1-5 I-2-1 II-1-5 	<ul style="list-style-type: none"> Find a fourth point of a parallelogram, given three other points with the use of the slope formula? Determine the standard equation of a circle given the center point and the length of its radius? How can one distinguish the graphs of an absolute value, greatest integer function and trigonometric functions?
October	<ul style="list-style-type: none"> Functions and derivatives Limits 	<ul style="list-style-type: none"> Derivative of a function Velocity and rates Properties of limits 	<ul style="list-style-type: none"> II-1-1 II-1-2 II-2-2 II-3-5 II-3-6 	<ul style="list-style-type: none"> Find the rate of change of temperature in degrees per inch of different mediums (i.e. fiberglass, wallboard and wood)
November	<ul style="list-style-type: none"> Derivatives of rational, inverse, and composite functions 	<ul style="list-style-type: none"> Formal differentiation of polynomial function Derivative of rational functions Sum, product and power rules of derivatives Implicit differentiation 	<ul style="list-style-type: none"> II-1-7 II-2-2 	<ul style="list-style-type: none"> What is the relationship between the graph of a function of time and the derivative of the function (i.e. plotting of points for rabbit and fox population)
December	<ul style="list-style-type: none"> Trigonometry First and second derivatives Derivative theorems 	<ul style="list-style-type: none"> Inverse functions and their derivatives Composite functions and their derivatives Brief review of trig Maximum and minimum problems Rolle's and MVT theorems Introduction to integrals 	<ul style="list-style-type: none"> I-2-2 II-2-3 II-1-3 II-1-5 II-2-5 	<ul style="list-style-type: none"> Find the average of the highest and lowest mean daily temperatures of given data? How fast is the altitude of a conical pile of sand changing, given the radius of the base and the rate of change of the volume?
January	<ul style="list-style-type: none"> Indefinite integrals Integration of trigonometric functions 	<ul style="list-style-type: none"> Related rates Introduction to integrals 	<ul style="list-style-type: none"> I-1-5 I-2-1 II-2-5 	<ul style="list-style-type: none"> Find the velocity and position (distance) as a function of time, given the acceleration $a=dv/dt$?
February	<ul style="list-style-type: none"> Areas by Calculus Rules for approximating integrals 	<ul style="list-style-type: none"> Definite and indefinite integrals Integration of curves to find area 	<ul style="list-style-type: none"> I-1-5 II-1-2 	<ul style="list-style-type: none"> Find the area bounded by the coordinate axes and a given function.
March	<ul style="list-style-type: none"> Alternative approximations of integrals 	<ul style="list-style-type: none"> Trapezoid and Simpson rules to find area under curves 	<ul style="list-style-type: none"> II-1-1 II-1-4 	<ul style="list-style-type: none"> Find the approximate area between a curve and the x-axis

			<ul style="list-style-type: none"> • II-1-7 	using either Simpson or Trapezoid Rules.
April	<ul style="list-style-type: none"> • Area and volume by integration 	<ul style="list-style-type: none"> • Area between curves • Volumes of slices, shells and washers • Average value functions 	<ul style="list-style-type: none"> • II-1-1 • II-1-4 • II-1-7 	<ul style="list-style-type: none"> • Find the solid generated by rotating a plane area about an axis in its plane? • Find the average daily inventory of a shipment of x cases of items every d days, given the function as the number of cases on hand d days after shipment.
May	<ul style="list-style-type: none"> • Integration of trigonometric and logarithmic functions 	<ul style="list-style-type: none"> • Transcendental functions Trig and inverse trig functions Natural logs and exponential derivatives and integrals 	<ul style="list-style-type: none"> • I-2-2 • I-2-3 • IV-1-4 • IV-3-4 	<ul style="list-style-type: none"> • Find the derivative and integration of various trig, natural logs and exponential functions.
June				