What is Calculus?

Calculus is the mathematics of change, of calculating problems that are continually evolving. This is possible by breaking such problems into infinitesimal steps, solving each of those steps, and adding all the results. Rather than doing each step individually, calculus allows these computations to be done simultaneously.

There are two primary branches of calculus: differential calculus and integral calculus.

Go down deep enough into anything and you will find mathematics. ~Dean Schlicter

" When I heard about AP Calculus I decided to apply because I needed a challenge in high school math. I know that if I had not been given the opportunity, I would never have passed first year calculus in university."

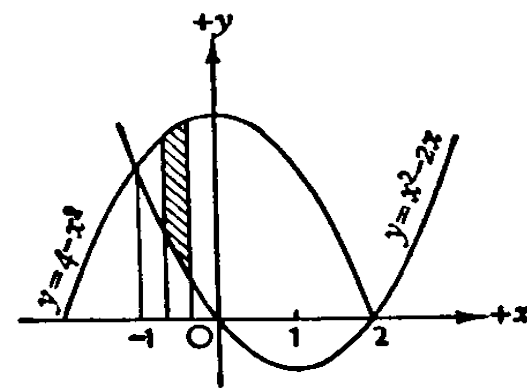*~ Christa Skinner, BSc (Environmental Studies)*

**AP Calculus AB
AVRSB Virtual Course**

Instructor:

Elinor Cameron
Central Kings Rural High School

~Brochure created by Linda Wheadon – Math Consultant, AVRSB

AP Calculus AB

Challenge yourself and explore one of the great intellectual accomplishments of mankind.

"Pure mathematics is, in its way, the poetry of logical ideas. "

~Albert Einstein

**Elinor Cameron
cameroem@nspes.ca**

Calculus Explained…

Differential and Integral Calculus

Differential calculus, or differentiation, is used primarily to determine the slope or steepness of a curve, also called a curve's derivative. Slope is a rate of change in a curve – a very steep curve is changing very fast – and calculus is used when a curve is very complicated, such as calculating the slope of a mountain or the speed of a roller coaster.

Integral calculus, or integration, deals with areas and volumes of complex figures, such as determining the greatest amount of space or volume beneath a dome in a stadium design in order to incorporate as many seats as possible.

 To find the area beneath a curve, integration breaks the area beneath the curve into minute pieces, determines the area of each piece, and adds them all together, or integrates them, into a final answer.

What You Should Know

To study calculus it is essential that you are able to breathe. Without that ability you will soon die, and be unable to continue. ☺

Beyond that, you will need some familiarity with two notions: the notion of a number, and that of a function.

You should have completed Math 11 Adv, Math 12 Adv and should be taking Pre-
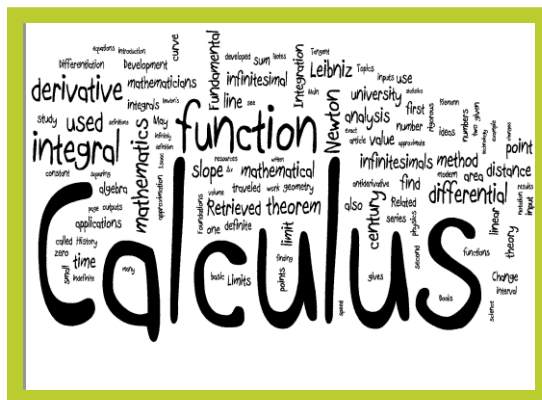
Why Study Calculus?

Calculus can help you understand the rate at which things change.

For example if you pump steam into an oil well to make the oil warmer and easier to pump, how quickly does the heat from the steam dissipate into the rock?

Blood in a blood vessel flows more quickly in the center of the vessel than near the walls where there is friction from the vessel wall.

How does the rate at which your heart is able to deliver blood to your extremities change if your blood vessels become constricted from a buildup of plaque on the vessel walls?

Problems in business, engineering, environmental science, chemistry, physics, medicine, geography and biology can all be understood more clearly with the application of calculus. We will look at questions from all of these fields.

Registering for AP Calculus gives you an advantage

You will be challenged to think, to apply your knowledge and to learn some complex and challenging mathematical ideas.

The opportunity to learn and to prepare yourself for success at university is here. Take advantage of this opportunity!

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