

# Comments on the First Essay

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The topic for your first essay is the derivative (of single variable calculus). There are many aspects to this topic; thus you will need to be selective in your choice of ideas to develop. An outline for the first essay is due in my mailbox, SEO 304, by Wednesday, September 4, 2002.

Below are the highlight of our class discussion of 08/26/02.

- 1) **Audience?** For what group should the essay be written? Those with and understanding of basic college algebra; we want to assume some mathematical sophistication.
- 2) **Style.** What is a good writing style? Most felt that the essay should be in the style of a style of a magazine article or a New York Times article.
- 3) **Development of subject.** How should the subject be developed? What aspects should be included? Here are a many of the aspects/suggestions which came out in discussion.
  - a) Discuss applications of derivatives.
  - b) Definition of how the derivative is computed, examples.
  - c) Start with a very well-chosen specific example to motivate the abstract concept of derivative.
  - d) Describe various formulations of the derivative; algebraic, geometric.
  - e) Discuss the history of the first description of derivative, the relationship between Newton and Leibnitz.
  - f) Discuss the historical context in which the formulation of the derivative was made; discuss what was happening in science at the time in particular.
  - g) Discuss problems the derivative solved in Physics and Astronomy at the time of its invention.
  - h) Discuss applications to other areas, such as economics and biology.
  - i) Discuss variations on the concept of the derivative of single variable calculus such as higher derivatives and derivatives of functions of more than one variable.