

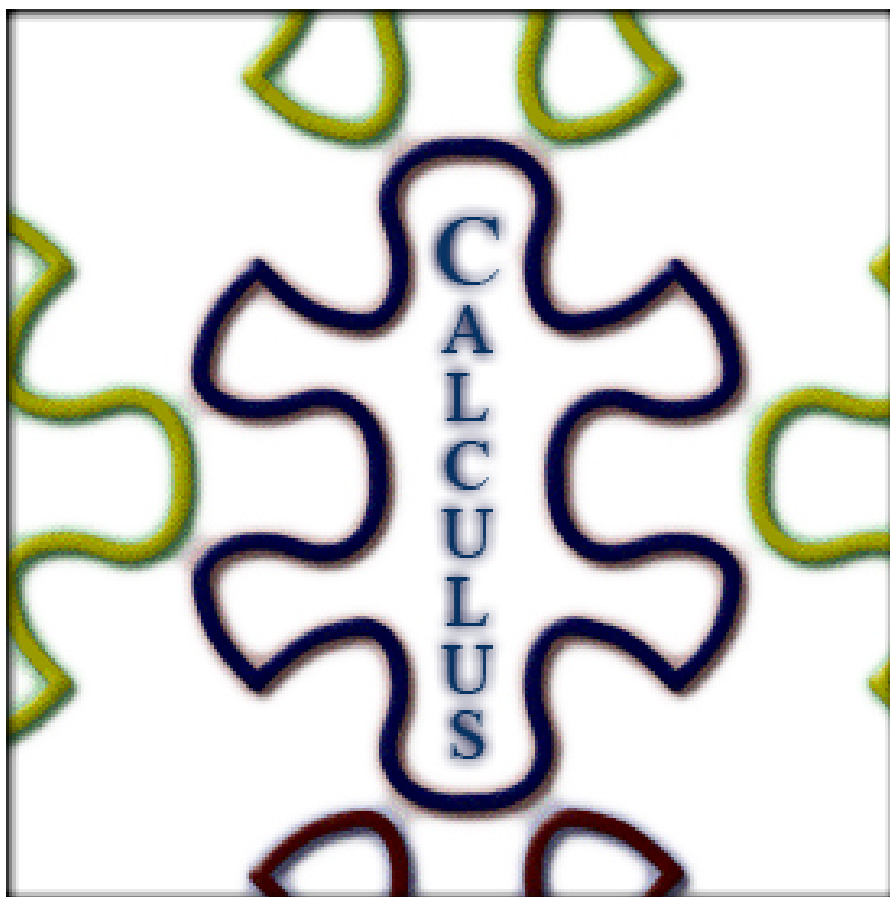
## AP Calculus BC Summer Work

This sheet will clearly define your summer work. It is not like last year's where you do a bunch of problems. This non-traditional assignment is meant to not only keep many of your skills that you gained intact, but to also get you started on the work of applying for college and figuring out how to pay for college. **Don't be daunted by the task unless you decide to wait until the very end of summer to do this work.** Each of you will be graded not only on the originality, organization and cleanliness of your work, but the complexity you undertook in formulating your assignment. However, your work can NOT emulate or duplicate anyone else's or neither one of you will receive credit. Also, I would hope that your integrity and character would prevent you from just looking things up online as this will only put you behind in the class this Fall. I am also asking that you do some things in preparing for college applications and scholarships. Feel free to email me at [steven.becker@orecity.k12.or.us](mailto:steven.becker@orecity.k12.or.us) if you need any help or guidance.

**There are 4 parts to this assignment. {Part 4 is the most critical!!}**

**Join the group messaging at 81010 with the message "@ochsbc1819" (no quotes)**

Okay, enough of the talk, turn the page for the directions for each part (yes, there are 4 parts):



**Part 1:** Formulate 5 Limit problems where using many different methods would have to be implemented to evaluate the limits. The following techniques must be employed on separate limit problems, but multiple can be used on the same problem:

- Simplifying
- L'Hospital's
- Direct Substitution
- Graphing
- Table
- A piecewise function where you must show the graph for the learner must be used for at least one of the problems.
- You also must involve at least one of each of the following types of functions: trig, exponential, polynomials, rational, and logarithms.
- **Attach the worked out solutions for each of the limits on a separate sheet of paper.**



**Part 2:** Formulate 1 function you will differentiate (yes, it will be a multiple term function).

- Each one of the following rules must be used somewhere in the function for calculating its derivative.
  - power rule
  - product rule
  - quotient rule
  - chain rule
  - log rule (where expansion is necessary first on the Natural Log only)
  - exponential rule (base “e” **and** non-base “e”)
  - Arc Trig rule
- Also, find the equation of a tangent line at a point for your function (make sure the point is on the graph of the function). **Again, you need to attach the worked out solution for the derivatives on a separate sheet of paper.**



**Part 3:** Formulate 5 “Basic” Integration problems – 2 definite and 3 indefinite.

- At least one definite must involve trig and trig values
- Each of the following must separately be involved in the problems:
  - Integrate to get an arc function
  - regular trig
  - natural log rule
  - exponential rule (only the “e” version is necessary)
  - u-substitution
  - two of the indefinites must come with an initial condition to help finding C.

**Again, you must also write up the solutions for each on a separate sheet of paper.**



**Part 4:** College Preparation items.

- Scholarships:
  - You must have a list of at least 5 scholarships {more is perfectly acceptable and recommended} that you are eligible for, with due dates noted
  - Have the necessary essays completed
  - Use [www.fastweb.com](http://www.fastweb.com), or [ochspioneers.org/scholarships](http://ochspioneers.org/scholarships) to help in your search, but don't limit yourself to just those websites. Search on Google to see what else you can apply for. You have a better chance at local scholarships, so research those lots.
  - Don't be afraid to go for the big bucks (aka Ford, Coke, Buick, etc)
  - Email teachers and counselors you want to write letters of recommendation for you to make sure they are willing and able to do this for you. Hold them accountable, but be courteous.
- College Applications
  - Have a list of at least 5 schools you would like to apply to – one of them should be your fall back if the others don't accept you, include due dates for applications
  - Write the essays for 2 of the schools you have chosen {if necessary}
  - Contact teachers and counselors that you would like to have write letters of recommendation for you {if necessary and hopefully they agree}
- FAFSA pre-preparation
  - Go online to [fafsa.ed.gov](http://fafsa.ed.gov)
  - Click on “Start a new FAFSA”
  - Click on the bubble for “Enter the student's information”
  - Fill in the required boxes and click next
  - Verify all the information and click next again
  - On the bottom left there will be a link to create an FSA ID, click this link
  - Complete all information and make sure you use an email you access regularly for the verification part. Email me when you are done.

Have a great summer!!! I look forward to seeing you all in the Fall!