

cca presents

# The Calculus Revue!

Opening 4/ Matinee: 4/

Product: a 20 to 30-minute presentation that summarizes the concepts, works through AP-level procedural examples, and provides *original* take-home problems and answers for the rest of the class (4-5 multiple choice problems, 2 open response problems)

Limits and Continuity: simplifying limits, limit existence graphically and algebraically, asymptotes, definition of continuity algebraically and graphically, making a function continuous, types of discontinuities, IVT and EVT; special trig limits [Chapter 1 of FT5]

Taking Derivatives: limit definition of derivative, power product and quotient rules, trig, exp/log, inverse trig; chain rule in tandem with each; simplifying before taking the derivative; implicit differentiation, L'Hôpital's Rule; derivatives of inverses, derivatives from a table [Chapter 2 of FT5]

Applying derivatives: find absolute extrema, finding critical numbers, justifying extrema, finding concavity regions and inflection points (be able to do all of the previous from given algebraic  $f$  and from a graph of  $f'$  or  $f''$ ), related rates, position-velocity-acceleration, Mean Value Theorem, linear approximation [Ch 3 of FT5]

Antiderivatives and Riemann Area: antiderivatives of all studied derivative rules, reverse chain rule, u-substitution, LRAM/RRAM/MRAM/TRAP from functions and or table of values and determining over or under-approximation [Chapters 4 and 6 of FT5]

Definite Integration/FTC: Evaluating definite integrals, including reverse chain rule; finding C, acceleration-velocity-position, accumulation functions algebraically and graphically, area between curves (including dy), accumulation word problems [Chapters 4 and 6 of FT5]

Possible way to delegate: one person might develop and deliver the summary/notes/conceptual understanding; one person might pick and be prepared to work out rigorous examples that demonstrate topic; one person might write and put together the take-home problem. All can then put together the answer key

Resources: *Fast Track to a Five* book has multiple choice and free response problems with explanations and suggested sections in textbooks for more detail/examples. FT5 also suggests AP free response problems to look at sorted by year and question (URL in book is wrong, go here instead: [bit.ly/apcalcabfrq](http://bit.ly/apcalcabfrq)); also the review packet passed out 3/27 is a good place for some inspiration of AP-style multiple choice problems

Grade: Assessment-category grade entered twice in Powerschool for weighting purposes. Criteria: clarity of summary/explanation, rigor and quality of examples and problems, mathematical accuracy.

*Huddle up with your teammates and rank your choices at [bit.ly/calcrevproj](http://bit.ly/calcrevproj) [only one submission per group please]. I will do my best to get people either of their top 2 choices!*