

1. **(30 points)** Material from sections 1.1-6: limits and continuity
2. **(30 points)** Material from sections 2.1-9: derivatives, implicit differentiation, related rates, tangent lines
3. **(30 points)** Material from sections 3.1-6, 8, 9: extreme points, graphing functions with calculus, optimization, mean value theorem, antiderivatives, differential equations
4. **(30 points)** Material from sections 4.1-6: integration, fundamental theorem of calculus, mean value theorem, symmetry, Riemann sums, numerical methods of integration
5. **(50 points)** Material from sections 5.1-5: area and volume, arclength, work
6. **(80 points)** (Essay) Explain Calculus.

Hint: Here are some ideas to consider in your essay. What is the object of study in Calculus? Define, explain, and give examples of important terms like: limit, continuous, derivative, antiderivative, integral. Explain relationships between these concepts. For instance, is a continuous function always differentiable? Is a differentiable function always continuous? Explain why or give counterexamples.