May 22, 2019

FOC Revision

Chapter 1

- [ ] Vertical line test
- [ ] Composite functions
- [ ] Secant line
- [ ] Transformation
- [ ] Inverse functions
- [ ] One-to-one function
- [ ] How to find inverse function

Chapter 2

- [ ] Definition of a limit
- [ ] Concept of a limit
- [ ] One-sided/Two-sided limits
- [ ] Understand and be able to use limit laws
- [ ] Squeeze theorem
- [ ] Definition of infinite limits
- [ ] Limits at infinity
- [ ] Continuity
- [ ] Theorems of continuity
- [ ] Continuity on an interval

Chapter 3

- [ ] Geometric meaning of tangent line and derivatives
- [ ] Definition of derivatives
- [ ] Relation between differentiable and continuous functions
- [ ] Rules of differentiation

- [ ] Chain rule
- [ ] Implicit differentiation

Chapter 4

- [ ] Absolute maximum and minimum
- [ ] Local max and min
- [ ] Local extreme point theorem
- [ ] Definition of critical points and how to find them
- [ ] Test for intervals of increase and decrease
- [ ] First derivative test
- [ ] Concavity and inflection point
- [ ] Test for concavity
- [ ] Second derivative test used to identify local max and min
- [ ] Be able to solve optimisation problem
- [ ] Definition of linear approximation to f at 0
- [ ] Mean value theorem
- [ ] L'Hopital's rule
- [ ] Antiderivative

Chapter 5

- [ ] Geometric meaning of integration
- [ ] Regular partition, grid points
- [ ] Riermann sum and all variants
- [ ] Definite integral
- [ ] Net area
- [ ] Reversing limit and identical limit
- [ ] Be able to use fundamental theorems of calculus to compute definite integral
- [ ] Integrals of even and odd functions
- [ ] Substitution rule

Chapter 6

- [ ] Area of a region between functions

- [ ] Length of a curve

Chapter 7

- [ ] Integration by parts
- [ ] Definition of improper integrals