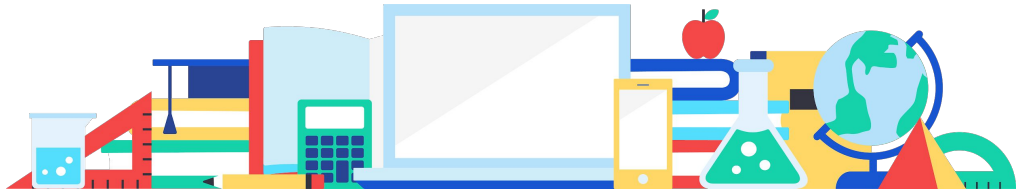
Calculus Review Guide

Updated January 2020



Key Topics

Key Topics Covered in Calculus

- Limits
  - Definition & properties of limits
  - One-sided limits
  - Limits at infinity & infinite limits
  - Continuity
  - Limit evaluation techniques
  - Intermediate Value Theorem
  - L'Hopital's Rule
- Derivatives & Differentiation
  - Definition & properties of derivatives
  - Power rule, product rule & quotient rule
  - Derivatives of common functions
  - Chain rule
  - Higher order differentiation
  - Implicit differentation
  - Differentiation of inverse functions
  - Differential equations
- Analyzing Functions
  - Critical points
  - Increasing / decreasing functions
  - Absolute and relative extrema
  - Concavity & inflection points
  - Mean Value Theorem
  - Extreme Value Theorem
- Integrals & Integration
  - Riemann sums
  - Fundamental Theorems of Calculus
  - Definition & properties of integrals
  - Definite and indefinite integrals
  - Integrals of common functions
  - Reverse power rule
  - Integration by u-substituion
  - Integration by parts
  - Applications of integration (including calculating area and volume)

Calculus

Additional Resources

- https://www.khanacademy.org/math/calculus-1
- http://www.elainetron.com/apcalc/apcalc.pdf
- http://pages.stat.wisc.edu/~ifischer/calculus.pdf
- http://tutorial.math.lamar.edu/Classes/CalcI/CalcI.aspx
- https://notendur.hi.is/adl2/CalcI_Complete.pdf
- https://ocw.mit.edu/resources/res-18-001-calculus-online-textbook-spring-2005/study-guide/
- http://www.math.nagoya-u.ac.jp/~richard/teaching/f2016/BasicCalculus.pdf