

Calculus study of change

Continuity

defn of most derivatives needs a limit

limits

Multivariate
 $\mathbb{R} \rightarrow \mathbb{R}^n$
 $\mathbb{R}^n \rightarrow \mathbb{R}$
 $\mathbb{R}^n \rightarrow \mathbb{R}^m$

Single variable
Cont vs Not

Depth of Cont

Integration

Multivariate
 $\mathbb{R}^n \rightarrow \mathbb{R}$

change coord system
double limits of integration

Single variable
defn rules

Applications
Center, area, Vol,
work, path, integrals

Differentiation

Multivariate
 $\mathbb{R} \rightarrow \mathbb{R}^n$, $\mathbb{R}^n \rightarrow \mathbb{R}^m$

Partial derivatives
Vector Valued Differentiable

Differentials
Directional Derivative

Single variate
Rules

Applications
Vel/Acc/Arc length
moment coord sys/
rates of change
direction of max
optimization

3D functions
- graphing
- intersections

Applications need us to work in 3D world

Sequences

Series
Convergence

Represent Cont. Funct
Taylor's + Maclaurin

Discrete

Parameterization
track thru time

Coordinate Systems
change perspective to solve problems