Concepts to know Exam 3: Math 142

Sections 5.5, 5.6, 6.1, 6.2, 6.4, 6.5, 7.1, and 7.2 are on the exam.

Material over functions and curve sketing

Derivatives ruels.

- Absolute maximum/minimum
  - of a continuous function on a closed interval.
  - of a function that is either not continuous or the interval is note closed.
- Second derivative test
- all derivative rules
- Optimization word problems: All of the problems covered in class are fair game.

Antiderivatives and integration material

- Antiderivative/Integration rules
  - regular rules
  - u-substitution
- Find $f(x)$ if given $f'(x)$ and a point on the function.
- The definite integral
  - Riemann sum
    - Left sum
    - Right sum
    - midpoint
  - properties of a definite integral.
  - When a Riemann sum is an over or under estimate.
  - when does a definite integral represent an area or a difference of areas.
  - when a definite integral represents the total change over a time period.
- The fundamental Theorem of Calculus
  - computing by hand
- Average value of a function.
- Area between two curves.
  - on an interval
  - bounded by the functions
- applications of the definite integration
  - consumer and producer suplus
  - continuous income stream
    - total income
    - future value
  - Gini index.
- Any additional topics discussed in class