Concepts to know Exam 1 : Math 142 Honors

- Section 1.1: The Coordinate System and functions.

  - Coordinate system
    * ordered pairs
    * scatterplot
  - Standardize values of data
  - Functions
    * independent and dependent variables
    * domain and range
      · algebraically
      · graphically
    * vertical line test
    * evaluating
  - Interval notation (open and closed intervals)
  - price-demand function
    * interpret

- Section 1.2: Linear functions and Average Rate of Change.

  - equation of a line
    * Average rate of change (ie slope of line)
    * point slope formula
    * slope intercept form
    * Intercepts
  - cost function (linear model)
  - linear depreciation
  - increasing, decreasing, and constant functions
  - piecewise defined functions
    * graphing
    * evaluating
  - Absolute value function

- Section 1.3: Quadratic functions and average rate of change on an interval.

  - parabola formula
    * vertex.
    * domain/range
    * maximum or minimum value
    * roots (zeroes)
      · factoring
      · quadratic formula
      · calculator
    * average rate of change

- Section 1.4: Operations on functions

  - sum, difference, product, and quotient
  - price-demand function, cost function, revenue function, profit function.
  - break-even points
  - polynomial functions
    * End behavior
    * Maximum and Minimum commands

- Section 1.5: Rational, radical, and power functions.

  - rational functions
    * vertical asymptotes
    * end behavior
    * Horizontal Asymptote
    * Intercepts
  - radical functions
    * domain
  - power functions

- Section 1.6: Exponential functions.

  - formulas
    * $y = a * b^x$
    * $y = a * e^{kx}$
  - growth and decay
  - compound interest
  - continuos interest
  - logistic curves
    * point of diminishing return

- Section 1.7: Logarithmic functions.

  - composition
  - Inverse functions
  - logarithms
  - log rules

- Section 1.8: Regression and Mathematical Models

  - standardizing the independent variable
  - scatter plot

- correlation coefficient **r**
  * good fit if r^2 is close to 1
  * bad fit if r^2 is close to 0
- methods of regression
  * linear
  * polynomial
  * exponential
  * logarithmic
  * logistic

- Any additional topic discussed in class.