

Topic #1: Function Review (Math 31)

COURSE INTRODUCTION

1. Course Outline: What is calculus about? 2 sides:
 - a. Finding areas of curved regions.
 - b. Finding the tangent line: Finding the maximum: Profit, energy usage

FUNCTION REVIEW (Reference: 1.1)

2. Goals:
 - a. Definition
 - b. 3 representations:
 - i. Graphical/visual
 - ii. Equation/algebraic
 - iii. Table
 - c. Evaluating functions (finding y values).
 - d. Relevance: Real world functions
3. Visual example of function and non-function.
4. A relationship between variables x and y, so that for any x there is at most one corresponding y.
5. 3 ways (at least) to describe a function: Graphically, equation, table.
6. Graphical representation
 - a) Draw increasing function and some x,y values.
 - b) Draw circle as non-function.
 - c) Vertical line test
 - d) **Handout (in-class work 1):** Is it a function? Find y values.
 - e) Dependent variable and independent variable: Say that “y is a function of x”
7. Table representation.
 - a) Function example
 - b) Non-function example
8. Equation representation
 - a) Function example: $y = x^2 + 3$
 - b) Non-function: $y^2 = x + 1$.
 - c) “f of x” terminology: $f(x) = x^2 + 3$
 - d) Function evaluation examples – Include piece-wise
 - e) From equation to graph ...
9. Real world functions
 - a. Function for height of object over time.
 - b. Subway wait time as a function of time of the day.
 - c. GPA as a function of study time.
 - d. Write function for area of square.
 - e. 1.1 (page 34): 52, 57