

MATH 141: PRECALCULUS

QUIZ 1B: FUNCTIONS (CHAPTER 1)

DISCLAIMER: This may or may not be a comprehensive list, but it's a very good start!
Know all aspects of these topics; I may go beyond listed subtopics.

CHAPTER 1: FUNCTIONS

Functions (1.1)

- Notation and Terminology
- Domain and Range
- Evaluating Functions

Graphs of Functions (1.2)

- Point-Plotting as a last resort
- Vertical Line Test (VLT)
- Domain and Range from a Graph
- Zeros (or "Roots") of a Function
 - Real Zeros as x -intercepts
 - Zeros of Radicals and Fractions
- Intervals of Increase, Decrease, and Constant Value

Basic Graphs and Symmetry (1.3)

- Basic Functions and Their Graphs
- Asymptotes
- Symmetry (Even, Odd, Neither)

Transformations (1.4)

- Translations: Vertical and Horizontal Shifts
- Reflections: About x -axis, y -axis, Origin
- Stretching and Squeezing (Nonrigid)
- Domain and Range
- Combining Transformations
- Going Between Graphs and Equations
- Translations through Coordinate Shifts

Piecewise-Defined Functions (1.5)

- Evaluating and Graphing
- Greatest Integer (or Floor) Function

Combining Functions (1.6)

- $f + g$, $f - g$, fg , $\frac{f}{g}$
- Linear Combinations
- Compositions of Functions
 - Decomposing a Composite Function
- Domains for the above

Symmetry Revisited (1.7)

Short Cuts for Even and Odd Functions

$x = f(y)$ (1.8)

Graphing

Horizontal Line Test (HLT)

Basic Graphs

Symmetry

Transformations

Inverses of One-to-One Functions (1.9)

Inverse Properties

Switching x (Domain), y (Range)

One-to-One Functions and the Horizontal Line Test (HLT)

Tables and Graphs of f vs. f^{-1}

Finding a Formula for $f^{-1}(x)$

Difference Quotients (1.10)

Difference Quotients and Average Rates of Change (including Average Velocity)

Evaluating

Derivatives (1.11)

(These are not on the quiz, but you should skim this for Calculus.)