

Summary Chapter 3: Functions

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Section 1:

Terminology

- Ordered pairs
- Relation
- Domain
- Range
- Function
- Vertical line test
- One-to-one function
- Horizontal line test
- Function notation

Be Able To

- Find the domain and range of a relation
- Determine whether a relation is a function
- Determine whether an equation represents a function (vertical line test)
- Determine whether a function is one-to-one (horizontal line test)
- Evaluate a function
- Graph basic functions
- Find and simplify a function's difference quotient
- **Apply the concepts:** Reference page 179 problems 88 - 92

Section 2:

Terminology

- Set-builder notation
- Interval notation
- Piecewise-define function

Be Able To

- Find the domain of a function define by an equation
- Identify the domain and range of a functions from its graph
- Use Set-builder notation and interval notation
- Graph piecewise-defined functions
- **Apply the concepts:** Reference page 195 problems 60 - 61

Section 3:

Terminology

- Average rate of change
- Increasing
- Decreasing
- Constant
- Local/relative maximum or minimum

Be Able To

- Find the average rate of change of a function
- Use a graph to identify intervals on which a function increases, decreases, or is constant
- Use a graph to locate local/relative maxima or minima
- Use a graph to locate absolute/global maxima or minima
- **Apply the concepts:** Reference page 208 problems 44 - 47

Section 4:

Terminology

- Composite function

Be Able To

- Combine functions using the algebra of functions, specifying domain
- Form composite functions
- Determine domains for composite functions
- Write functions as composite
- **Apply the concepts:** Reference page 221 problems 90 - 97

Section 5:

Terminology

- Even function
- Odd function
- Symmetries

Be Able To

- Use vertical shifts to graph functions
- Use horizontal shifts to graph functions
- Identify even or odd functions and recognize their symmetries

Section 6:

Terminology

- Absolute value equation

Be Able To

- Graph an absolute value functions
- Solve an absolute value equation

Section 7:

Terminology

- Inverse function

Be Able To

- Verify inverse functions
- Determine the domain and range of an inverse function, and restrict the domain of a function to make it one-to-one
- Find or the inverse of a function
- Use the horizontal line test to determine if a functions has an inverse function
- Use the graph of a one-to-one function to graph its inverse function
- Find the inverse of a function and graph both functions on the same axes
- **Apply the concepts:** Reference page 266 problems 45 - 47