Videos for Chapter 1 Pre-Calc

Functions and Their Graphs

**Major Objectives: Analyze functions, their graphs, and their inverses.**

1. Evaluate functions and find their domains.

2. Analyze graphs of functions.

3. Identify and graph shifts, reflections, and non-rigid transformations of functions.

4. Find arithmetic combinations and compositions of functions.

5. Find inverse functions graphically and algebraically.

**Sec 1.1 Lines in the Plane**

**Learning objectives** (Read Pages: 3-10)

1. Calculate Average Rate of Change between 2 points

2. Write and graph an equation of a line in point-slope form

3. Write and graph an equation of a line in slope-intercept form

4. Write and graph an equation of a line in general form

5. Write and graph equations of horizontal and vertical lines

6. Understand how the slopes of parallel lines are related

7. Understand how the slopes of perpendicular lines are related

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| --- | --- | --- | --- | --- | --- | --- |
|  | Slope | Slope-Intercept Form | Point-Slope Form | General Form | Parallel Lines | Perpendicular Lines |
| Video | [C:\Users\David\Downloads\qrcode.14708535.png](http://www.youtube.com/watch?v=O8fo4H_185g) | [C:\Users\David\Downloads\qrcode.14708576.png](http://www.youtube.com/watch?v=3t7E8PTfey0) | [C:\Users\David\Downloads\qrcode.14708582.png](http://www.youtube.com/watch?v=eHPTyYbNmx4) | [C:\Users\David\Downloads\qrcode.14708586.png](http://www.youtube.com/watch?v=BP6VhzU-piI) | [C:\Users\David\Downloads\qrcode.14708590.png](http://www.youtube.com/watch?v=mNa7RbXXZeg) | [C:\Users\David\Downloads\qrcode.14708590.png](http://www.youtube.com/watch?v=mNa7RbXXZeg) |

Slope: <http://www.youtube.com/watch?v=O8fo4H_185g>

Slope-Interceptform: <http://www.youtube.com/watch?v=3t7E8PTfey0>

Point-SlopeForm: <http://www.youtube.com/watch?v=eHPTyYbNmx4>

General Form: <http://www.youtube.com/watch?v=BP6VhzU-piI>

Parallel Lines: <http://www.youtube.com/watch?v=mNa7RbXXZeg>

PerpendicularLines: <http://www.youtube.com/watch?v=mNa7RbXXZeg>

**Sec 1.2 Functions**

Learning objectives (Read Pages: 16-23)

1. Know the definition of a function.
2. Be able to express answers in interval notation.
3. Be able to find the difference quotient and simplify your answer.
4. Be able to compose functions.
5. Be able to evaluate a Piecewise-Defined function.

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|  | Def. Function | Piecewise-Defined function | Difference Quotient | Domain |
| Video | [C:\Users\David\Downloads\qrcode.14708630.png](http://www.youtube.com/watch?v=0YreX1wYe_Y) | [C:\Users\David\Downloads\qrcode.14708685.png](http://www.youtube.com/watch?v=3zHHidvbyak) | [C:\Users\David\Downloads\qrcode.14829764.png](http://www.youtube.com/watch?v=v5P4y0OkED4)[C:\Users\David\Downloads\qrcode.14708649 (1).png](http://www.youtube.com/watch?v=1O5NEI8UuHM)    Example 2  Example 1 | C:\Users\wcohen\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\KODS6WIC\qrcode.15017109.png |

Def. Function: http://www.youtube.com/watch?v=0YreX1wYe\_Y

Piecewise-Defined function: http://www.youtube.com/watch?v=3zHHidvbyak

Difference Quotient Ex 1: http://www.youtube.com/watch?v=1O5NEI8UuHM

Difference Quotient Ex 2: http://www.youtube.com/watch?v=v5P4y0OkED4

Domain: http://www.youtube.com/watch?v=w81y25anEOM

**Sec 1.3 Graphs of Functions**

Learning objectives (Read Pages: 29-36)

1. Be able to determine the domain and range of a function.
2. Be able to use the Vertical Line Test for functions
3. Be able to determine the open intervals on which each function is increasing, decreasing, or constant.
4. Be able to use a graphing utility to approximate the relative minimum and relative maximum of a function.
5. Be able to graph piecewise functions.
6. Be able to identify odd and even functions.

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|  | Domain/Range | Inc/Dec/Max/Min | Graph Piecewise fun. # 1 | Graph Piecewise fun. # 2 | Odd and Even functions |
| Videos | [C:\Users\David\Downloads\qrcode.14708756.png](http://www.youtube.com/watch?v=ObEucyZX464) | [C:\Users\David\Downloads\qrcode.14708765.png](http://www.youtube.com/watch?v=aJuJOB6NTuc) | [C:\Users\David\Downloads\qrcode.14708772.png](http://www.youtube.com/watch?v=-gwffMEr8i8) | [C:\Users\David\Downloads\qrcode.14708782.png](http://www.youtube.com/watch?v=hDNAVh0VtTc) | [C:\Users\David\Downloads\qrcode.14708786.png](http://www.youtube.com/watch?v=oKKcIK_PgEk) |

Domain/Range: <http://www.cleanvideosearch.com/media/action/yt/watch?v=ObEucyZX464>

Inc/Dec/Max/Min: <http://www.cleanvideosearch.com/media/action/yt/watch?v=aJuJOB6NTuc>

Graph Piecewise fun. #1: <http://www.youtube.com/watch?v=gwffMEr8i>8

Graph Piecewise fun. #2: <http://www.cleanvideosearch.com/media/action/yt/watch?v=hDNAVh0VtTc>

Odd and Even function: <http://www.cleanvideosearch.com/media/action/yt/watch?v=oKKcIK_PgEk>

**Sec 1.4 Shifting, Reflecting, and Stretching Graphs**

Learning objectives (Read Pages: 41-46)

1. Be able to recognize graphs of parent functions.
2. Be able to use vertical and horizontal shifts and reflections to graph functions.
3. Be able to use nonrigid transformations to graph functions.

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|  | Shifts # 1 | Shifts # 2 | **Reflections and Shifts** | Nonrigid Transformations |
| **Video** | **[C:\Users\David\Downloads\qrcode.14708816.png](http://www.youtube.com/watch?v=5oQgzup9nx4)** | **[C:\Users\David\Downloads\qrcode.14708831 (1).png](http://www.youtube.com/watch?v=h5HEs6krrE8)** | **[C:\Users\David\Downloads\qrcode.14708839.png](http://www.youtube.com/watch?v=oHop0B4vEYU)** | **[C:\Users\David\Downloads\qrcode.14708849.png](http://www.youtube.com/watch?v=0gxksY57vps)** |

**Shifts #1** [**https://www.youtube.com/watch?v=5oQgzup9nx4**](https://www.youtube.com/watch?v=5oQgzup9nx4)

**Shifts #2** [**https://www.youtube.com/watch?v=h5HEs6krrE8**](https://www.youtube.com/watch?v=h5HEs6krrE8)

**Reflections and Shifts** [**https://www.youtube.com/watch?v=oHop0B4vEYU**](https://www.youtube.com/watch?v=oHop0B4vEYU)

**Nonridgid Transformations** [**https://www.youtube.com/watch?v=0gxksY57vps**](https://www.youtube.com/watch?v=0gxksY57vps)

**Sec 1.5 Combinations of Functions**

Learning objectives (Read Pages: 50-55)

1. Be able to add, subtract, multiply, and divide functions.
2. Be able to find compositions of one function with another function.
3. Be able to use combinations of functions to model and solve real-life problems.

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|  | Arithmetic Combinations | Composition of Functions |  |
| Video | [C:\Users\David\Downloads\qrcode.14708901.png](http://www.youtube.com/watch?v=I8Iul0Om-t4) | [C:\Users\David\Downloads\qrcode.14708882.png](http://www.youtube.com/watch?v=S4AEZElTPDo) |  |

Arithmetic Combinations <https://www.youtube.com/watch?v=I8Iul0Om-t4>

Composition of functions <https://www.youtube.com/watch?v=S4AEZElTPDo>

**Sec 1.6 Inverse Functions**

Learning objectives (Read Pages: 60-66)

1. Be able to find inverse functions and verify that two functions are inverse functions of each other.
2. Be able to use graphs of functions to decide whether functions have inverse functions.
3. Be able to determine whether functions are one-to-one.
4. Be able to find inverse functions algebraically.

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|  | Finding Inverse Functions | verifying functions are inverse | one-to-one function |  |
| Video | [C:\Users\David\Downloads\qrcode.14710524.png](http://www.youtube.com/watch?v=Ec5YYVxyq44) | [C:\Users\David\Downloads\qrcode.14710547.png](http://www.youtube.com/watch?v=auQdlFkI3xw) | [C:\Users\David\Downloads\qrcode.14710564.png](http://www.youtube.com/watch?v=s02tm3veZk8) |  |

Finding Inverse Functions <https://www.youtube.com/watch?v=Ec5YYVxyq44>

Verifying functions are inverse <https://www.youtube.com/watch?v=Ec5YYVxyq44>

One-to –one functions <https://www.youtube.com/watch?v=s02tm3veZk8>

**Sec 1.7 Linear Models and Scatter Plots**

Learning objectives (Read Pages: 71-75)

1. Be able to construct scatter plots and interpret correlations.
2. Be able to use scatter plots and a graphing utility to find linear models for data.

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|  | construct scatter TI | linear models for data |
| Video | [C:\Users\David\Downloads\qrcode.14710619.png](http://www.youtube.com/watch?v=bqEnt6oRwho) | [C:\Users\David\Downloads\qrcode.14710630.png](http://www.youtube.com/watch?v=qaecfKTa1cA) |

Construct scatter plot TI <https://www.youtube.com/watch?v=bqEnt6oRwho>

Linear models for data <https://www.youtube.com/watch?v=qaecfKTa1cA>