
Noteworthy Framework

Examples & Documentation (Solutions)

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NOTEWORTHY

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Preface

Welcome to the **Noteworthy Framework**. This document serves as both a demonstration of the framework's capabilities and a reference for its features.

1 About Noteworthy

Noteworthy is a modular framework for creating beautiful educational documents in Typst. It provides a comprehensive set of tools for:

- **Structured Layouts:** Automated chapters, sections, and covers.
- **Themed Components:** Pre-styled blocks for definitions, theorems, examples, and more.
- **Advanced Plotting:** Integrated 2D and 3D plotting capabilities.
- **Customizable Themes:** A robust theming engine with multiple built-in presets.

2 Using This Guide

Each section of this document demonstrates a specific module of the framework. You can find the source code for these examples in the `content/` directory, which serves as a practical reference for your own documents.

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Noteworthy

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Chapter 01

Core Components

This chapter demonstrates the fundamental building blocks of the Noteworthy framework, including text blocks, layouts, and basic document structure.

Chapter 01.01

Content Blocks

1 Content Blocks

Noteworthy provides a variety of semantic blocks to structure your educational content.

1.1 Definitions & Theorems

DEFINITION | Vector

A **vector** is a quantity that has both magnitude and direction. It is often represented by an arrow.

THEOREM | Pythagorean Theorem

In a right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides:

$$a^2 + b^2 = c^2$$

1.2 Proofs & Solutions

Proof |

Let a, b be the lengths of the legs and c be the length of the hypotenuse. Construct a square of side $a + b$. ∴ The area relationships confirm the theorem.

EXAMPLE | Finding the Hypotenuse

Given a right triangle with legs of length 3 and 4, find the length of the hypotenuse.

Solution 1 |

Using the Pythagorean theorem:

$$c = \sqrt{3^2 + 4^2} = \sqrt{9 + 16} = \sqrt{25} = 5$$

1.3 Notes & Remarks

NOTE | Important

Always remember to check the units when solving physics problems using vectors.

NOTATION | Vector Notation

Vectors are typically denoted by boldface letters (\mathbf{v}) or arrows (\vec{v}).

ANALYSIS | Geometric Interpretation

Geometrically, vectors can be added using the parallelogram rule or the triangle rule.

Chapter 01.02

Layout Elements

1 Layout Elements

This section demonstrates various layout utilities available in Noteworthy.

1.1 Equations

EQUATION | Maxwell's Equations

$$\nabla \cdot (E) = \frac{\rho}{\varepsilon_0}$$

$$\nabla \cdot (B) = 0$$

$$\nabla \times (E) = -\partial \frac{(B)}{\partial t}$$

$$\nabla \times (B) = \mu_0(J) + \mu_0\varepsilon_0\partial \frac{(E)}{\partial t}$$

1.2 Conditional Content

Noteworthy supports conditional rendering based on the `show-solution` configuration.

NOTE | Instructor's Note

This content is only visible when `show-solution` is set to `true` in `config.typ`.

1.3 Custom Snippets

You can define custom math snippets in `config.typ` for faster typing.

such that
without loss of generality
 \therefore Q.E.D.

Chapter 02

Plotting & Geometry

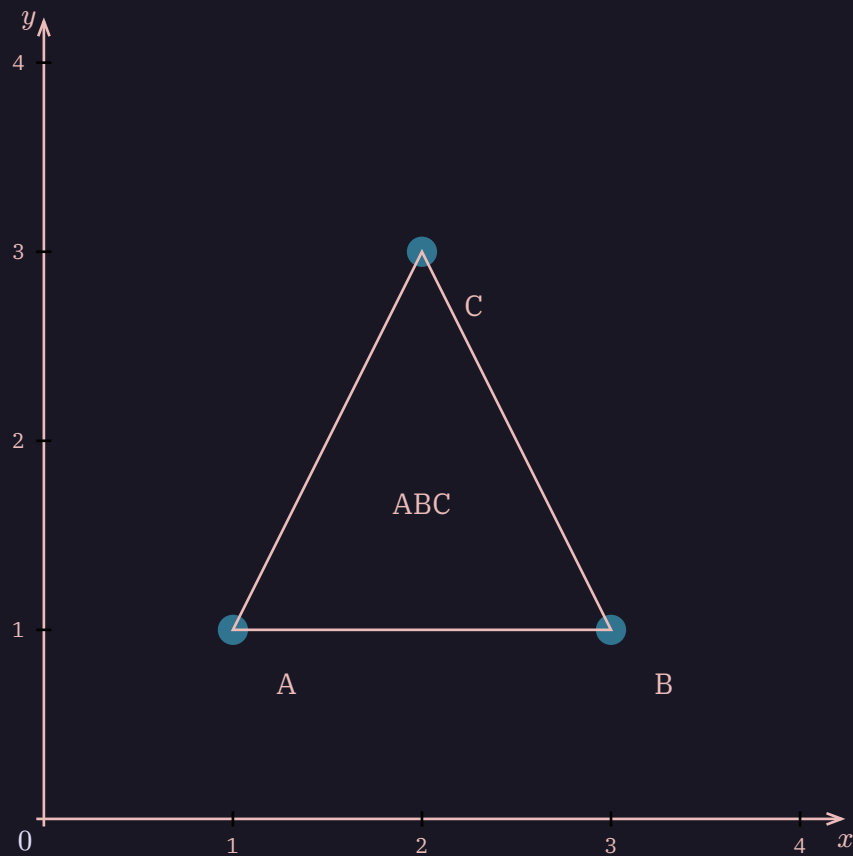
Explore the powerful plotting capabilities of Noteworthy, from basic 2D graphs to complex geometric constructions and vector diagrams.

Geometry (*Geoplot*)

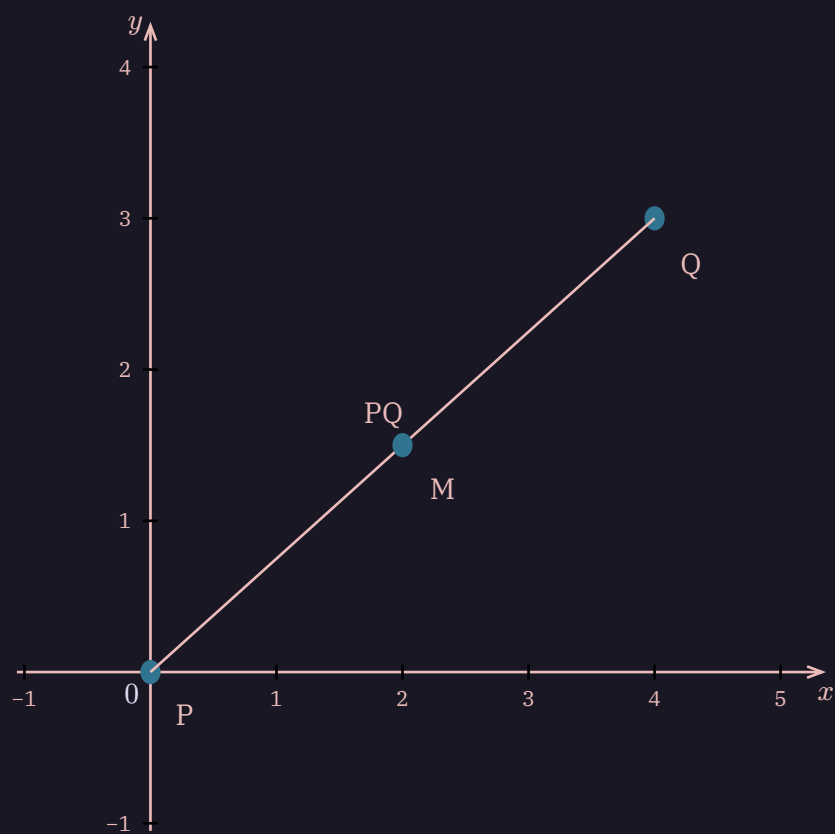
1 Geometry (Geoplot)

The geometry module provides a unified object-oriented system for constructing Euclidean geometry, with intelligent labeling and comprehensive style support.

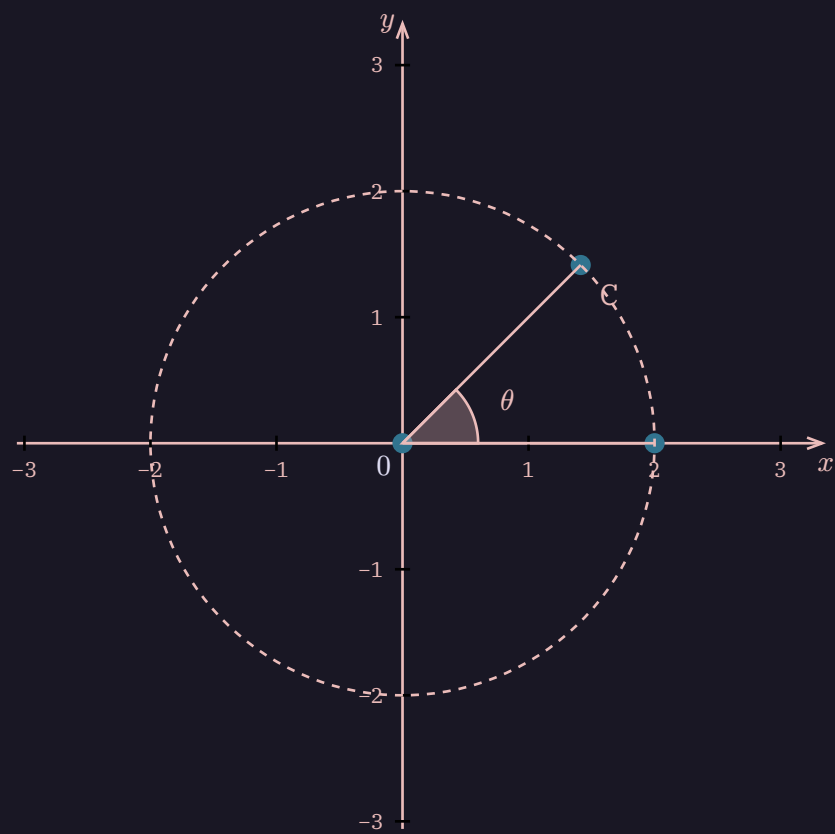
1.1 Points & Triangles



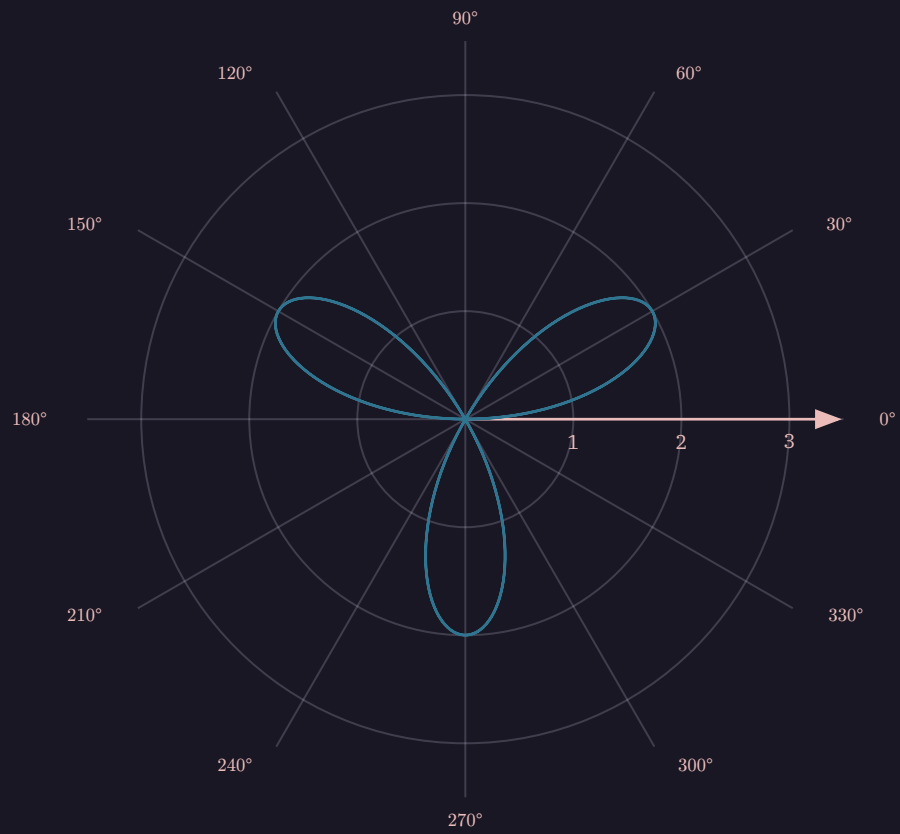
1.2 Lines & Segments



1.3 Angles & Circles



1.4 Polar Plots

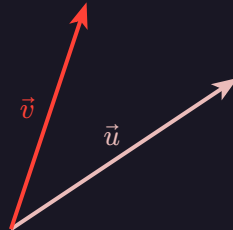


Vectors (*Vectorplot*)

1 Vectors (Geoplot)

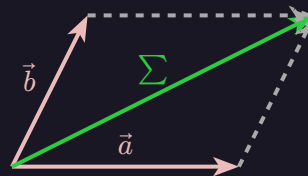
Visualize vectors using the unified object system.

1.1 Vector Objects



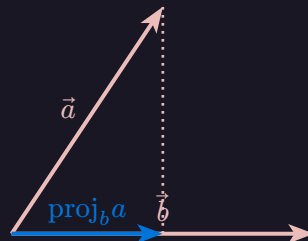
1.2 Vector Addition

Demonstrating the parallelogram method using object composition:



1.3 Vector Projection

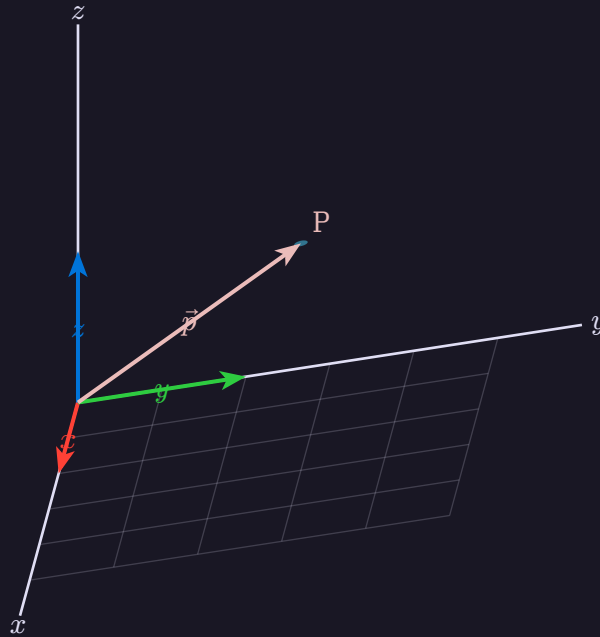
Visualizing projection of a onto b .



3D Space (Spaceplot)

1 3D Space (Spaceplot)

Render 3D scenes with correct perspective using space-canvas.



Chapter 03

Data & Visualization

Learn how to visualize data and mathematical concepts using the Grapher, Combiplot, and Tableplot modules.

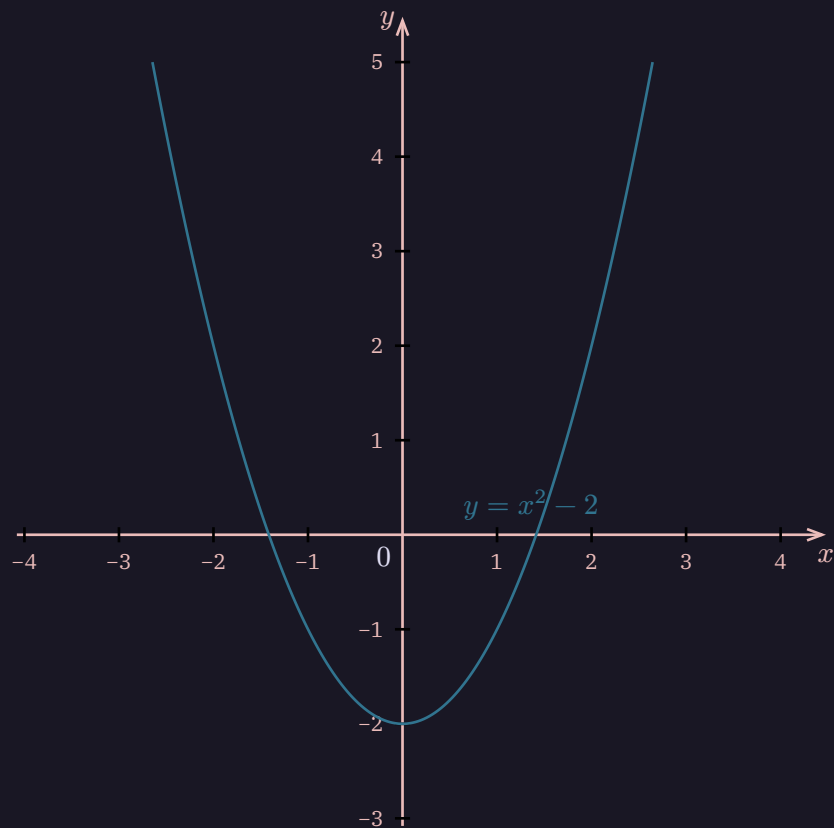
Chapter 03.01

Function Graphs

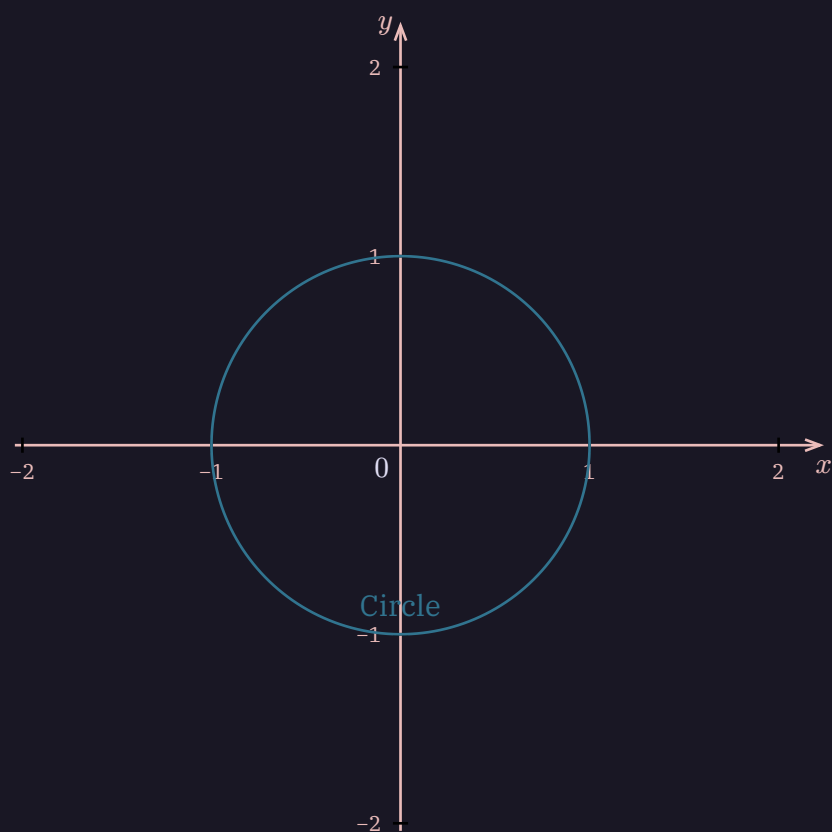
1 Function Graphs

Plot mathematical functions easily with the new geometry system.

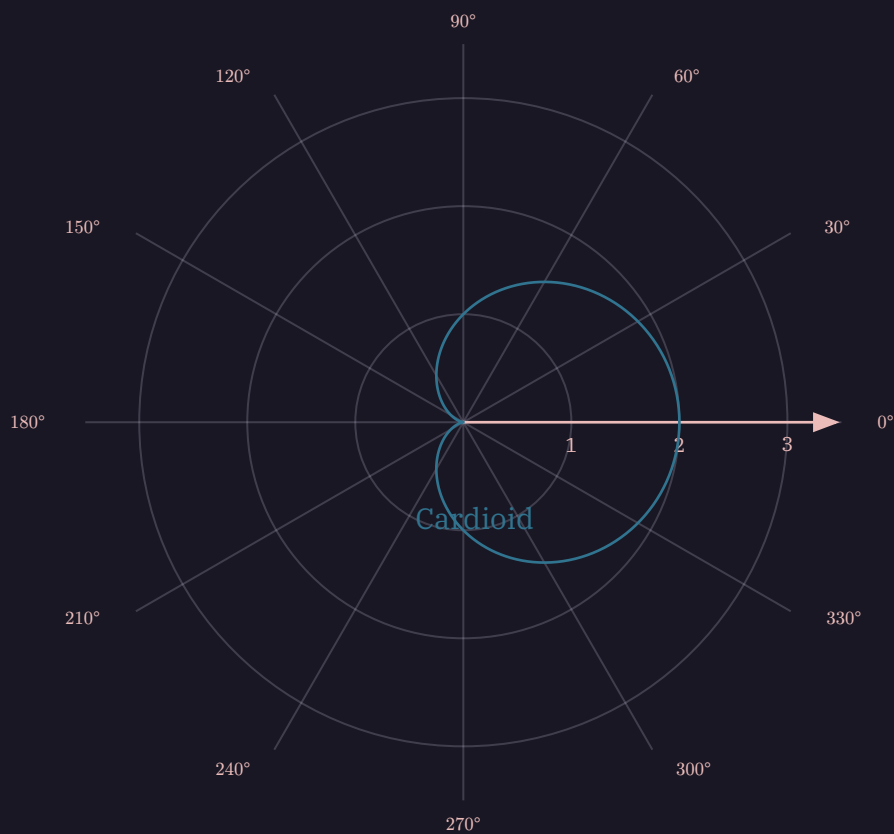
1.1 Cartesian Functions



1.2 Parametric Functions (Circle)

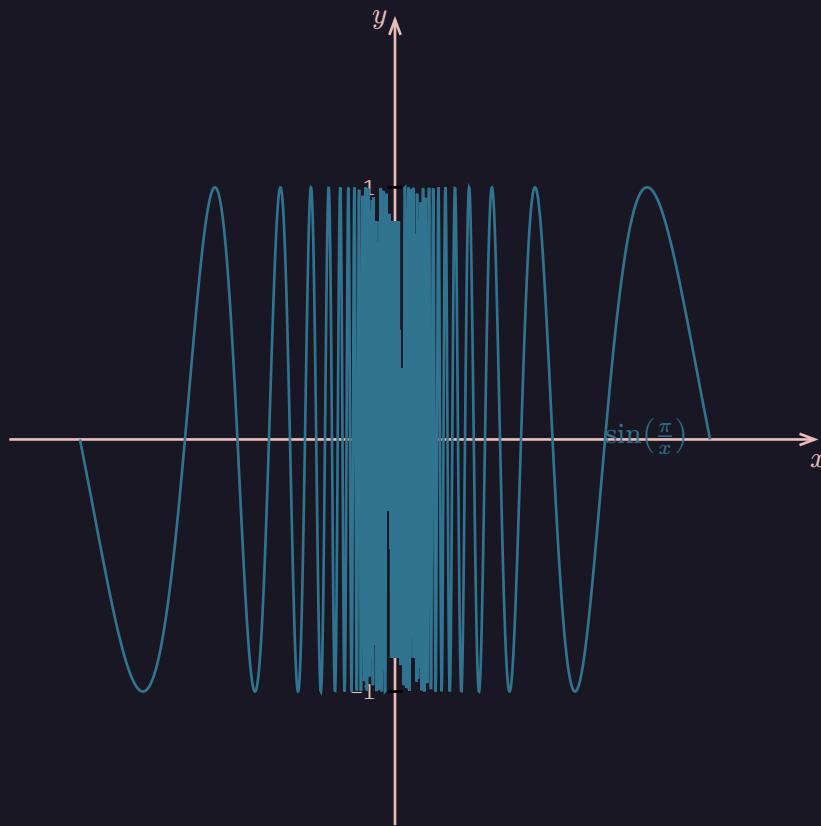


1.3 Polar Functions (Cardioid)



1.4 Robust Rendering (Singularity Handling)

The `robust-func` uses adaptive sampling to correctly render functions like $\sin(\frac{\pi}{x})$ near singularities:

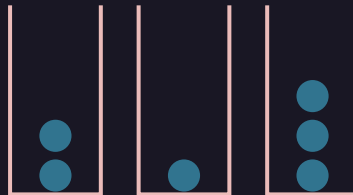


Combinatorics

1 Combinatorics

Visualizations for counting problems.

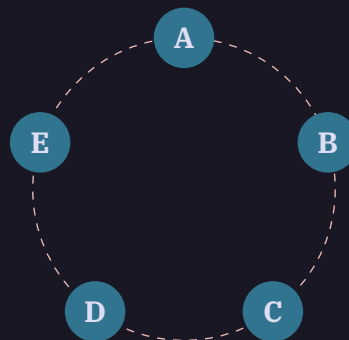
1.1 Stars and Bars (Boxes)



1.2 Linear Arrangements



1.3 Circular Arrangements



Chapter 03.03

Tables

1 Tables

Themed tables for data presentation.

1.1 Standard Table

| Name | Role | Level |
|---------|----------|--------|
| Alice | Engineer | Senior |
| Bob | Designer | Mid |
| Charlie | Manager | Lead |

1.2 Compact Table

| ID | Status |
|-----|--------|
| 001 | OK |
| 002 | Fail |
| 003 | OK |

1.3 Value Table (Function Values)

| x | $f(x)$ |
|-----|--------|
| 1 | 2 |
| 2 | 4 |
| 3 | 8 |

1.4 Grid Table

| | |
|-----|-----|
| 100 | 120 |
| 110 | 130 |