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# Noteworthy Framework

*Examples & Documentation (Solutions)*

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*NOTEWORTHY*

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# Preface

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

## 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.

## 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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*Sihoo Lee & Lee Hojun*  
*Noteworthy*

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## Chapter 01

# Core Components

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

## Section 01.01

# Content Blocks

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### Content Blocks

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

### 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:

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

### 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:

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

## 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.

## Section 01.02

# Layout Elements

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### Layout Elements

This section demonstrates various layout utilities available in Noteworthy.

### Equations

#### EQUATION | Maxwell's Equations

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

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

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

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

### 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`.

### Custom Snippets

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

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

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## Chapter 02

# Plotting & Geometry

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



## Section 02.01

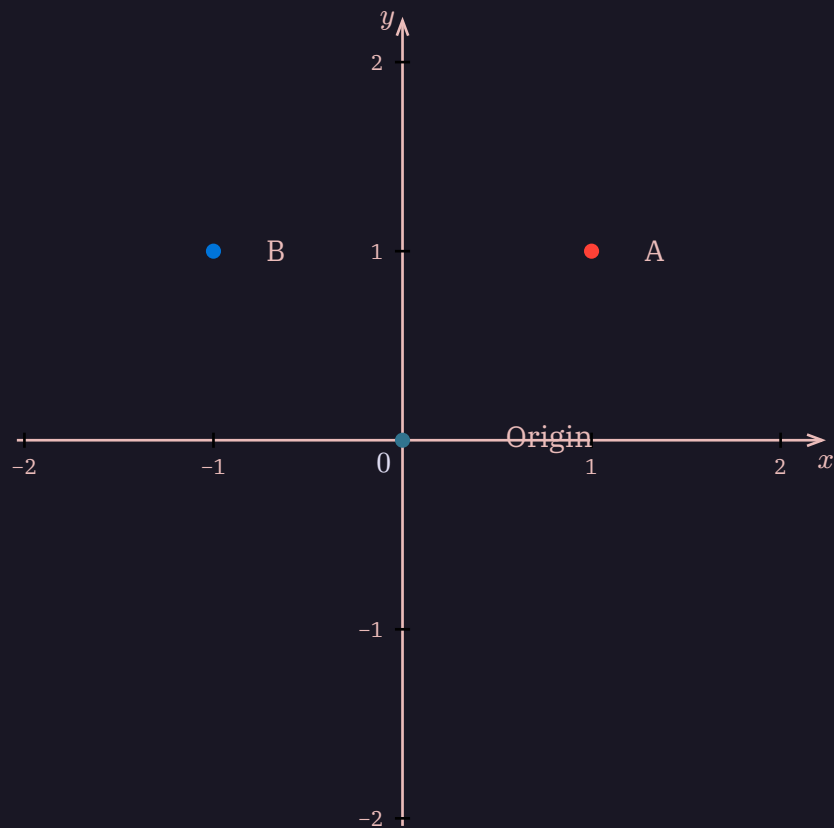
# *Basic Plots*

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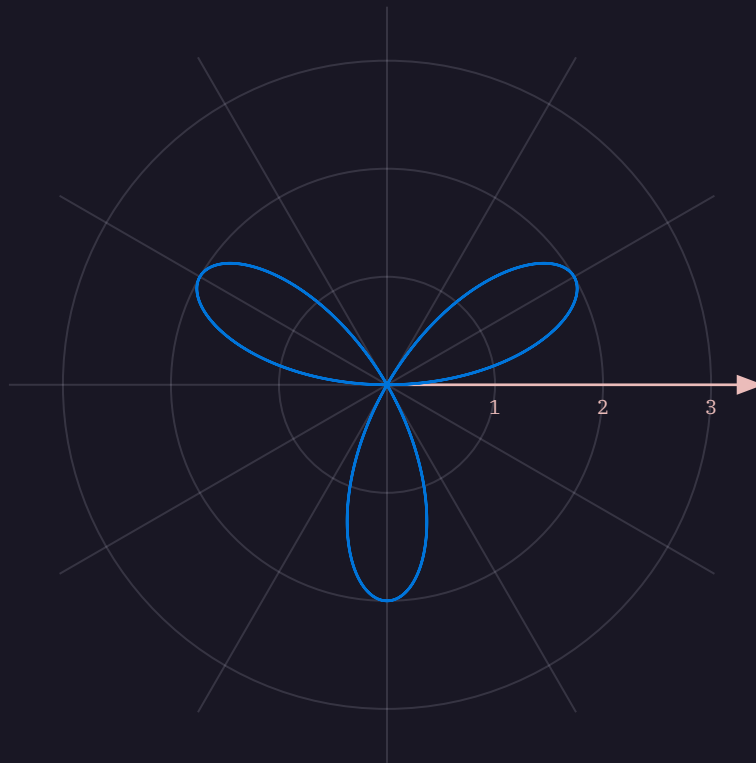
### Basic Plots

Noteworthy includes a powerful plotting engine based on CeTZ.

### Rectangular Plots

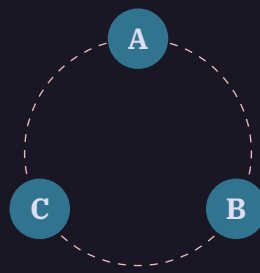


## Polar Plots



## Blank Plots (Combi-plot)

Useful for diagrams without axes.



## Section 02.02

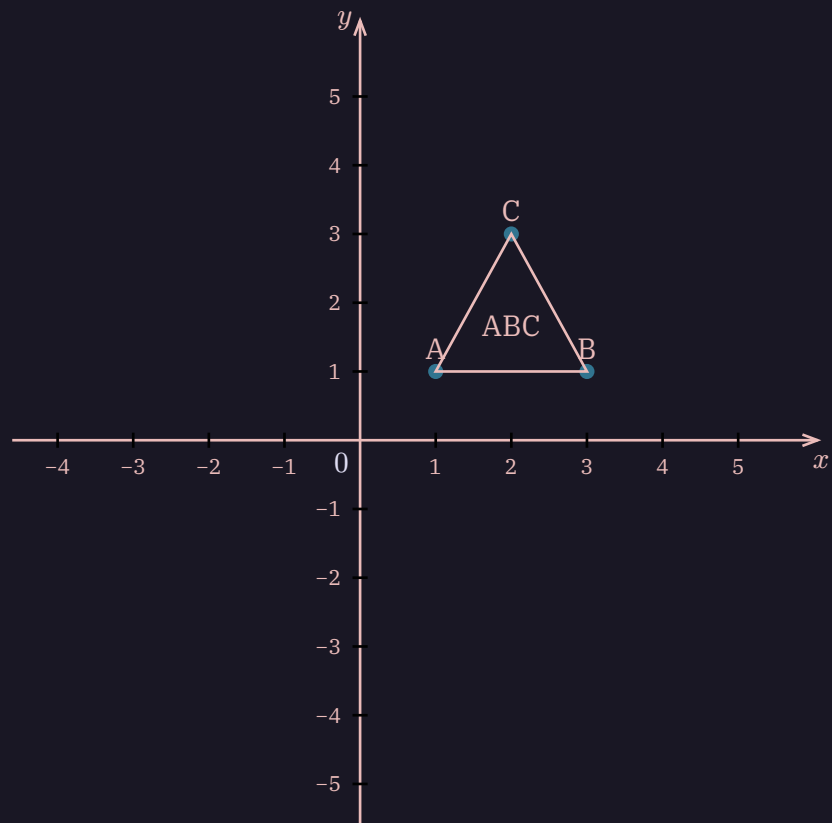
# *Geometry (Geoplot)*

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### **Geometry (Geoplot)**

The `geoplot` module provides tools for Euclidean geometry constructions.

#### **Points & Polygons**



## Section 02.03

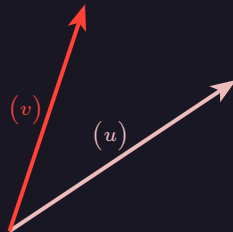
# Vectors (*Vectorplot*)

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### Vectors (*Vectorplot*)

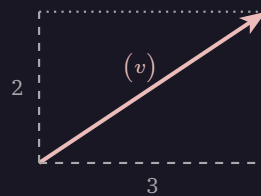
Visualize vectors and vector operations.

#### Vector Drawing

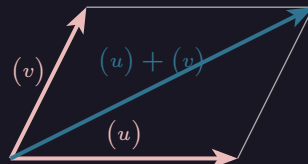


#### Vector Components

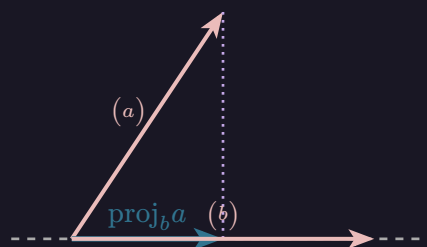
Shows the x and y components of a vector.



#### Vector Addition



#### Vector Projection



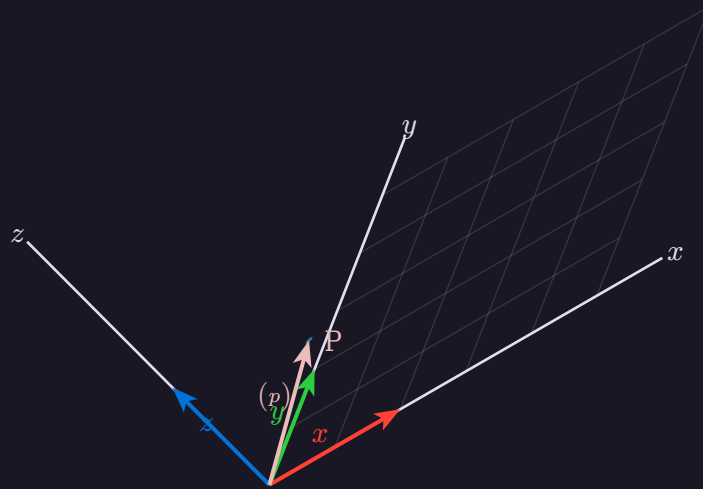
## Section 02.04

# *3D Space (Spaceplot)*

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### 3D Space (Spaceplot)

Render 3D scenes with correct perspective.



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## Chapter 03

# Data & Visualization

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

## Section 03.01

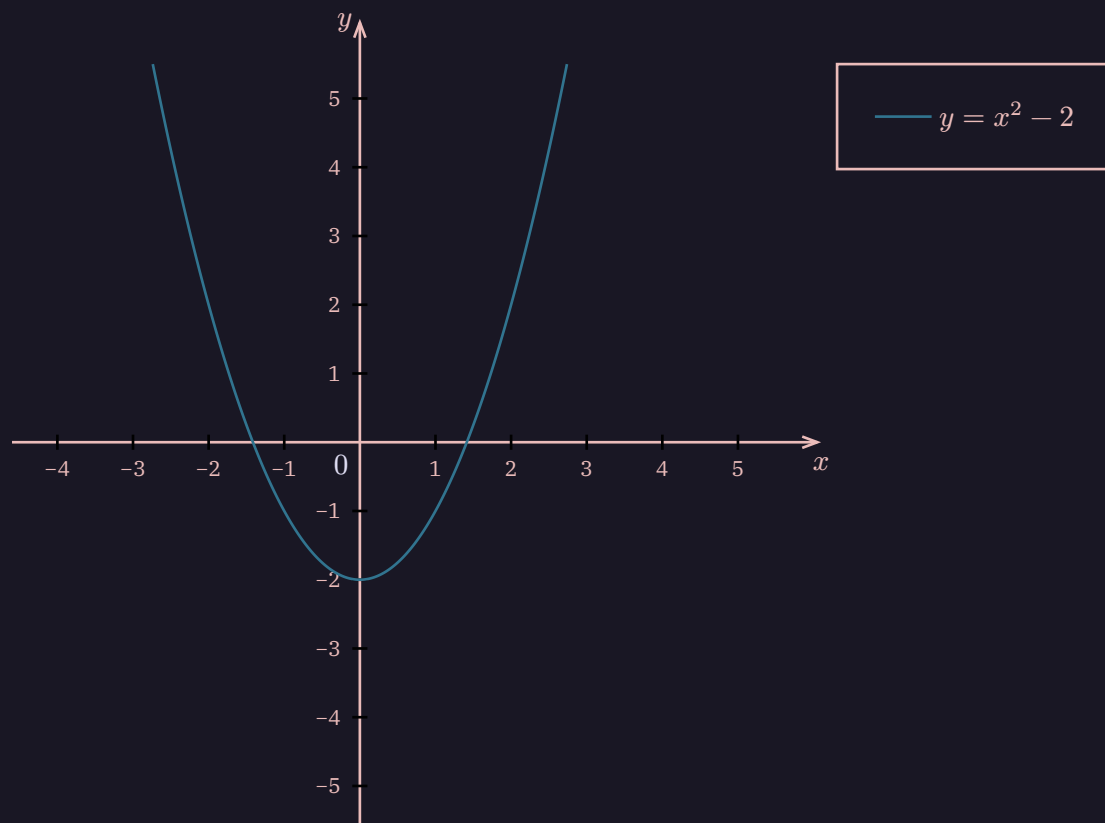
# *Function Graphs*

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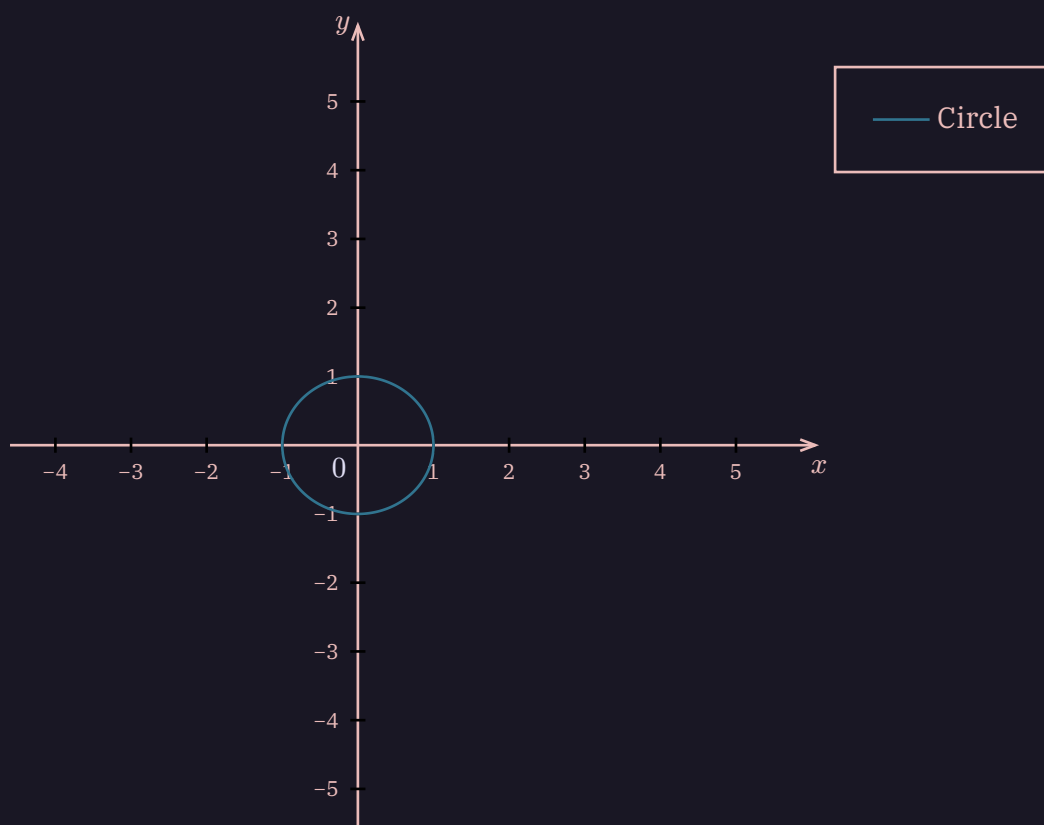
### Function Graphs

Plot mathematical functions easily.

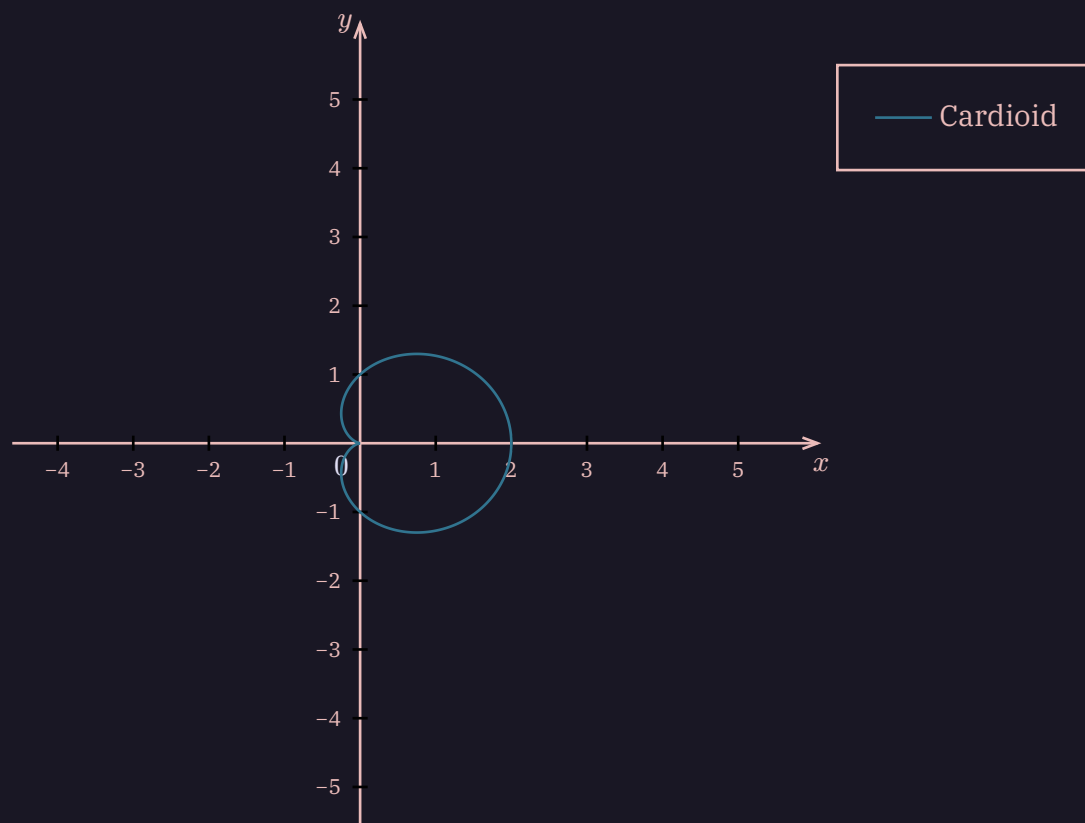
#### Cartesian Functions



## Parametric Functions



## Polar Functions





## Section 03.02

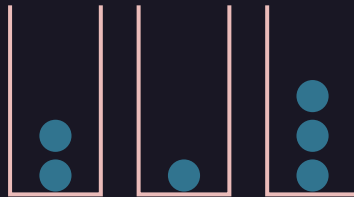
# Combinatorics

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## Combinatorics

Visualizations for counting problems.

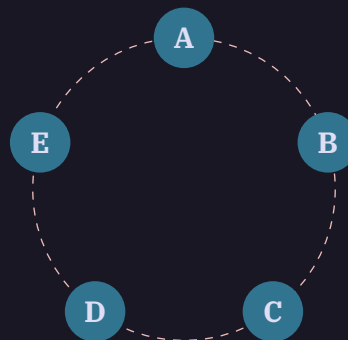
### Stars and Bars (Boxes)



### Linear Arrangements



### Circular Arrangements



## Section 03.03

# Tables

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### Tables

Themed tables for data presentation.

#### Standard Table

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

#### Compact Table

ID	Status
001	OK
002	Fail
003	OK

#### Value Table (Function Values)

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

#### Grid Table

100	120
110	130