# Introduction To LATEX Hands on

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### **Chapter 1**

# **Creating Diagrams and Figures**

### 1.1 Diagrams

### 1.1.1 TikZ

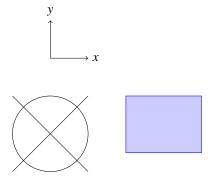


Figure 1.1: A sample diagram

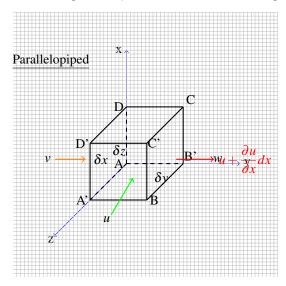
In Figure 1.1, we can see a sample diagram created using the TikZ package. The TikZ package provides a versatile set of tools for drawing various types of diagrams and figures directly within your LaTeX document. You can define coordinates, draw lines and shapes, add labels, and customize the appearance of your diagram using a wide range of options and styles.

In this example, the tikz package is loaded, and within the tikzpicture environment, you can define your diagram using TikZ commands. The code provided draws a simple diagram consisting of lines, circles, rectangles, and arrows.

You can compile the code with a LaTeX compiler to see the resulting PDF output.

### **Another Example**

Let the edges AB,AD,AA' of the fluid element be along the x-,y- and z-axes and their length be dx,dy and dz respectively.



### **Chapter 2**

## **Including Images**

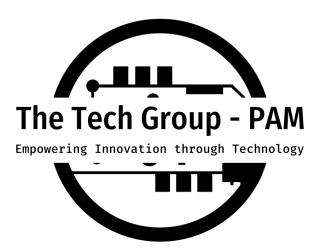


Figure 2.1: The Tech Group Logo

In Figure 2.1, we can see the logo of The Tech Group. The

\includegraphics

command from the 'graphicx' package is used to include the image. You can specify the path to your image file and adjust the width to fit your document layout. You can also add a caption and a label for referencing the figure in your text.

Make sure the image file

the-tech-group-pam-high-resolustion-logo-black-on-transparent-background\_01.png

is located in a folder named images relative to your LaTeX document.

### **Chapter 3**

### **Typesetting Equations**

In this section, we will explore how to typeset equations using LaTeX's math mode and the 'amsmath' package.

### **Inline Equations**

Inline equations are incorporated directly within the text. You can use single dollar signs (\$) to enclose the equation. For example, the quadratic formula  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$  is typeset inline.

### **Display Equations**

Display equations are centered and set apart from the text. You can use double dollar signs '(\$\$)' or the '

' syntax to display equations. For instance, the equation for the area of a circle is shown below:

$$A = \pi r^2$$

### **Numbered Equations**

Numbered equations can be accomplished using the 'equation' environment. For instance, the Pythagorean theorem is expressed as:

$$a^2 + b^2 = c^2 (3.1)$$

### **Aligning Equations**

The 'align' environment allows aligning multiple equations. Consider the system of equations:

$$2x + 3y = 8 (3.2)$$

$$x - 4y = -5 (3.3)$$

### 3.0.1 Mathematical Symbols

LaTeX provides a comprehensive set of mathematical symbols. For example, you can use Greek letters such as  $\alpha$ ,  $\beta$ , and  $\gamma$ , as well as operators like  $\Sigma$ ,  $\int$ , and  $\frac{a}{b}$ . The 'amsmath' package extends the range of available symbols and provides additional environments for advanced math typesetting.