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**An Introduction to Using LaTeX**  
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### Introduction

Put your text here. This is how to introduced *italicized text*, and also how to introduced ***bold italics text***. Note that each word is separated from the next by at least one space.

Note also that a new paragraph is started when you introduce a new line. If you want to introduce some math, then you can do it inline, such as  $C = \pi r^2$ , and using Greek letters, we can also have  $\alpha^2/\varepsilon = 3$ . We can also put something into math mode in a block such as,

$$\int_a^b \sin(x)dx = -\cos(x) + C. \tag{1}$$

In this case, note that punctuation is added to the math to end the sentence.

### Discussion

We demonstrate a technique to set up and configure a figure using the `\includegraphics` command embedded into the `picture` environment embedded into the `figure` environment. The `picture` environment is needed to control the spacing, while the `figure` environment is needed to control the floating of the figures in the document. Note that you can refer to the figure with its label, i.e., in Figure 1 you have the setup of the figure. Note that you need to create the figures so that the labels and legends scale well with the fonts being used after you have scaled the figure. The example in Fig. 1 should be examined in detail as the axes labels are not generated with the figures. Instead, they are added as overlays using the `\put` command in the `picture` environment. It also illustrates the use of captions and references using labels. Note that we did not type out that this is Figure~1, we typed out that it is `Figure~\ref{fig:sheet}`.

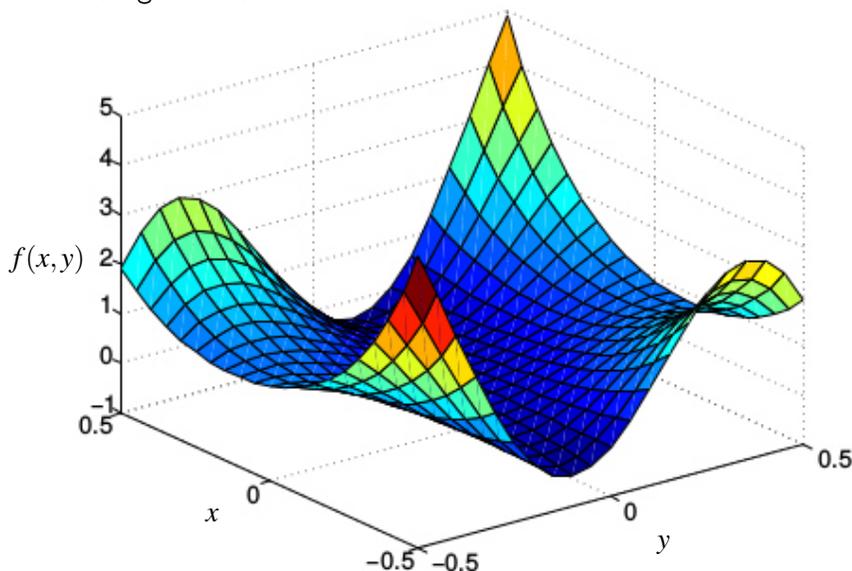


Figure 1: Example of using a raster image which is scaled and annotated with axes.

$i$	1	2	3	4	5	6	7
$P_i$	0.34	0.11	0.11	0.11	0.11	0.11	0.11
$l(P)$	1	2	2	2	2	2	2
$\text{code}(P)$	0	10	11	12	20	21	22
Ideal Length	0.982	2.009	2.009	2.009	2.009	2.009	2.009

Table 1: Tabulated results in base 3 with actual and ideal code length.

## Typesetting a table

### Introduction to technical writing

This is the introduction section. This should involve a brief discussion of the purpose of the report, what concepts are essential, and what will be investigated. Use this template for writing your analysis files. If you examine this file closely, it has some very useful features in it that will set up your paper so that it has a more professional appearance. You should also review the rules for typesetting  $\LaTeX$ .

Be mindful of some simple rules in using English:

1. Do not use the first person singular in a formal report. Use the first person plural or the third person in a passive construction. Thus *I did this work*, is unacceptable, while, *We did this work*, or *This work was done*, are acceptable.
2. When typesetting mathematics, use punctuation. All math equations must read as if they were English sentences. You must end these with a period, and put commas where needed.
3. Keep the verb tense constant. Do not switch from past to present, and then back again, and then back again to the present. There may be a need to do this, however be careful when you are doing it.
4. Avoid colloquial English. These are formal reports. These are not email messages to your friends. Be aware that some words in English such as *big* are colloquial, and do not appear in formal writing. Do not use *very* to modify every adjective. It is usually meaningless.

Get a manual on English usage and style from the library, or purchase one from the bookstore. Realize that if you plan to stay in academia, or get an administrative position in a company or a laboratory, you have to be able to communicate effectively. Work on this skill.

Then be mindful of some simple rules for typesetting  $\LaTeX$ :

1. Note that the previous sentence beginning this list is not indented since it does not begin a new paragraph. To avoid indentation, use the `\noindent` command.
2. Note the `\usepackage` command which changes the font and invokes the AMS mathematics commands (which simplify typesetting). Note the use of the `\thispagestyle{empty}` command to avoid the printing of page number on the title page.
3. Use  $\LaTeX$  commands carefully. Please review how to use math mode. Many of the reports had math in the text that was not in math mode. All symbols, variable, and so on are to be written in math mode. We do not use computer science variables to write equations, either, thus

$$\overset{\text{upperbound}}{\sum_{i=1}} x_i^2$$

is not acceptable, while

$$\sum_{i=1}^n x_i^2$$

is acceptable.

4. There is no need for asterices in multiplication. Thus  $ab$  or  $xy$ , not  $a*b$  or  $x*y$ .
5. Please note that L<sup>A</sup>T<sub>E</sub>X uses the forward and backward quotes. Thus we write “*This is a quote*”, and not “*This is a quote*”. Examine this example closely. The forward quote is written using the ‘ and not the ’ quote. The forward quote is typically on the upper left of your keyboard, on the tilde key, and below the Esc key.

### Background on technical writing

Introduce the mathematical ideas and how they are implemented in this section. You should not have any results here. Only introduce the mathematics that is necessary to discuss your results. For example, the method used to compute each norm may be important, however you may choose to either typeset the equations or refer to these in your text, or any other reference. You may refer to equations using a bibliography reference generated using a bib file. Note that this is how to include a citation in the text to [5]. It often happens, though, that you need to include a reference that is not directly cited in the text. Then you need to use the `\nocite{}` command.

### References

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- [5] Dongbin Kim. The effect of financial aid on students’ college choice: Differences by racial groups. *Research in Higher Education*, 45(43-70), February 2004.
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- [7] Michael S. McPherson and Morton O. Schapiro. Does student aid affect college enrollment? new evidence on a persistent controversy. *The American Economic Review*, 81:309–318, March 1991.