Your Title Goes Here

Your Name Goes Here

March 13, 2025

1 Introduction

You may choose to toggle-off the double-spacing for yourself, but the pdf that you submit to me needs to be double spaced!

Observe that the date updates automatically to the date on which the document was compiled.

Below is some math stuff. Recall that one uses dollar signs to typeset mathematics.

A sequence $(X_1, Y_1), (X_2, Y_2), \ldots, (X_n, Y_n)$ and an equation $y = a + bx$. Next is an expression *not* in displaystyle $E = \sum_{i=1}^{n}(Y_i - a - bX_i)^2$, followed by the same expression *in* displaystyle $E = \sum_{i=1}^{n}(Y_i - a - bX_i)^2$.

Last, we show the use of double-dollar-signs to both center and use displaystyle formatting. This includes the use of spacers (\quad) and the \text command to get precise formatting.

$$
x_i = \frac{X_i - \overline{X}}{\sqrt{\sum(X_i - \overline{X})^2}} \quad \text{and} \quad y_i = \frac{Y_i - \overline{Y}}{\sqrt{\sum(Y_i - \overline{Y})^2}}.
$$

For long strings of equations you would like to align, see the example below.

$$
\begin{aligned}
E &= \sum(y_i - a - bx_i)^2 \\
&= \sum(y_i^2 + a^2 + b^2 x_i^2 - 2ay_i - 2bx_i y_i + 2abx_i) \\
&= \sum y_i^2 + \sum a^2 + \sum b^2 x_i^2 - \sum 2ay_i - \sum 2bx_i y_i + \sum 2abx_i \\
&= 1 + na^2 + b^2 - 2br \\
&= (1 - r^2) + na^2 + (b - r)^2 \ .
\end{aligned}
$$

For a pair of equations to align at the equal sign, one on top of the other, see the example below. Note the use of "\left (" to force parentheses to be the right size.
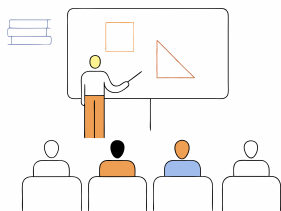
$$\frac{y - \overline{Y}}{\sqrt{\sum(Y_i - \overline{Y})^2}} = \left(\frac{\sum(X_i - \overline{X})(Y_i - \overline{Y})}{\sqrt{\sum(X_i - \overline{X})^2 \sum(Y_i - \overline{Y})^2}} \right) \left(\frac{x - \overline{X}}{\sqrt{\sum(X_i - \overline{X})^2}} \right)$$

$$y - \overline{Y} = \left(\frac{\sum(X_i - \overline{X})(Y_i - \overline{Y})}{\sum(X_i - \overline{X})^2} \right) (x - \overline{X}) \ .$$

In Section 2, I will tell you about displaying images. In Section 3, you will find examples of tables. I'm not sure you will need them but there ya go. In Section 4 you will find a template for manually including a bibliography.

2   Figures

Below is a picture using the includegraphics command.

In Figure 1, you will see the same picture but in the figure formatting so that it can be referenced and have a caption. You should include any pictures inside the figure structure for clarity.
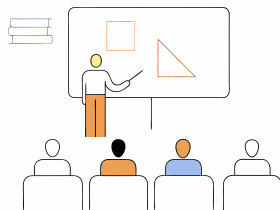

Figure 1: This is a picture I retrieved from Unsplash by creator called Momo Studio [MomoStudio] on March 2025

You will see another figure, centered, in Figure 2.

Note that the source file for the figure needs to be in the same location as the *filename.tex* file.

Figure 2: This is a picture I retrieved from Unsplash by creator called K. Tungay [Tungay25] on March 2025

3 Tables

Here are some tables.

Explored?	vertices	tentative distances
	S	
	A	
	B	
	C	
	D	
	E	

and

vertex	minimum distance to S
S	
A	
B	
C	
D	
E	

4 Bibliography

For future reference, there are automated ways of managing a bibliography, but these require some additional files and can make compiling tricky. Thus, for this class, I suggest hand-coding it.

There are to things to note. You can (and should) reference the sources in the body of your text. For example, maybe I cite the online version of the Euclid's Elements here [Joyce98] and the book is cited here [Burton11].

Linking references or citations will require that you compile *twice*. That is, after the *first* compile, all references will be ??. On the second, you will get the proper number/citation.

References

[Burton11]   Burton, David M. The History of Mathematics: An Introduction. 7th ed., McGraw-Hill, 2011.

[Joyce98]   Joyce, David E.. "Euclid's Elements, Introduction" Department of Mathematics and Computer Science, Clark University, 1998, http://aleph0.clarku.edu/~djoyce/java/elements/elements.html.

[MomoStudio] Momo Studio, Man Giving a Presentation [Illustration]. Unsplash. https://unsplash.com/illustrations/a-man-giving-a-presentation-to-a-group-of-people-mvbZKEDrLuk

[Tungay25]   Tungay, K. Pile of Color Pencils [Photograph]. Unsplash. https://unsplash.com/photos/pile-of-color-pencils-2LJ4rqK2qfU.