

MK's Latex Examples

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Hello World! @ AU Homepage

Let's begin our learning here [https://
latex-tutorial.com/tutorials/first-document/](https://latex-tutorial.com/tutorials/first-document/)

1 Various Bullets

1. One
 - (a) Two
 - (b) Three
 - (c) Four

2. Five

- X
- Y
- Z

3. Six

2 Writing Formulas

2.1 Equation - ONLY support one formula per line

$$formula1 : f(x) = x^2 \quad --- \quad formula2 : \prod_2^n \quad (1)$$

2.2 Align - support MULTIPLE formulas in the same block

NOTE: need use package amsmath to enable Align

$$\begin{aligned} f(x) &= x & 2 \\ g(x) &= \frac{1}{x} \\ F(x) &= f(x) + g(x) = \int_a^b \frac{1}{3} x^3 \\ W(x) &= \frac{1}{\sqrt{x}} + \frac{1}{\sqrt[3]{y}} \\ Z(x) &= (3 + 2) * 2 \end{aligned}$$

2.2.1

So which one, align or equation, will you use?

2.3 Inline math

The form is used for $f(x) = x^2$ or λ , so you can easily to use them.
<https://github.com/LucaCappelletti94/adigraph>

2.4 Matrics

$$\begin{bmatrix} 3 & 2 \\ 9 & 4 & x \end{bmatrix}$$

3 Embedding Pictures/Figures

3.1 One figure

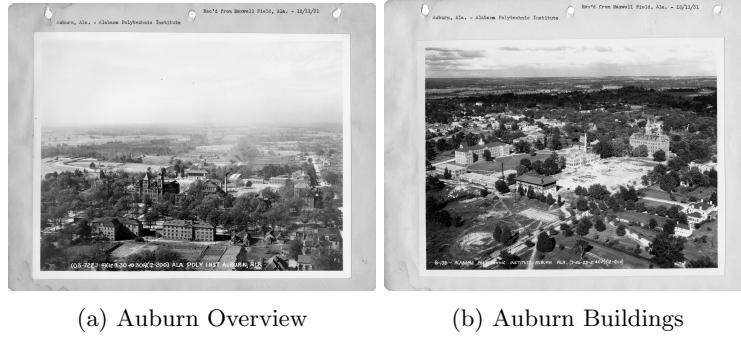
NOTE: need to use package
graphics <https://github.com/LucaCappelletti94/adigraph> to enable figure



Figure 1: Auburn Campus

3.2 Multiple figures

NOTE: need to use package subcaption to enable Multiple figures. Here are figures:



(a) Auburn Overview

(b) Auburn Buildings

Figure 2: Two Auburn Old Pictures

3.3 Use float and H

Use package `float` and attribute `H` to strictly fix the pictures' position to HERE.

Listing 1: An Example

```
\usepackage{float}
...
\begin{figure}[H]
...
\end{figure}
```

4 Drawing

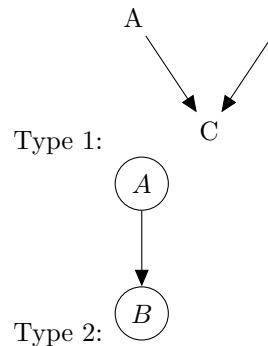
4.1 Drawing Geometry

Tikz is the most powerful and popular package for drawing geometry as well as general drawing.

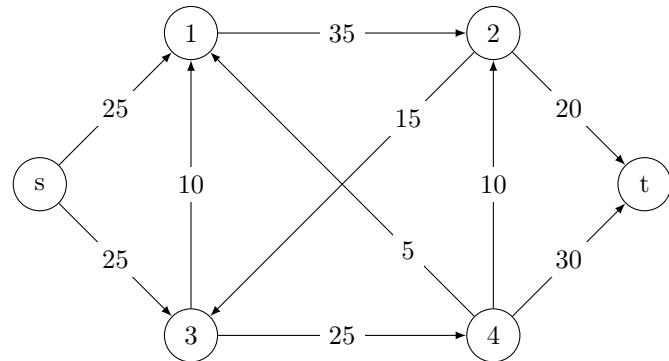
I suggest to use GeoGebra, a strong Web IDE to draw diagrams - <https://www.geogebra.org/classic#geometry>

4.2 Drawing Graph

Use 2 packages: tikz and bayesnet to draw Bayesian Network chat.



4.3 Use packages: adigraph



5 Using packages

Packages are like plugins to extend the Latex' capabilities. Some common commands are listed here.

Listing 2: tlmgr commands and etc

```
tlmgr list --only-installed    # show installed packages  
  
tlmgr search <package-name>   # search a packages  
tlmgr info <package-name>     # show a package's intro, no matter  
                               installed or not  
tlmgr install <package-name>   # install a new packages  
  
tlmgr update --self --all      # update package index  
  
kpsewhich article.sty         # locate a package's .sty file  
  
# env variables can define additional directories to be searched.  
echo $TEXMFHOME $TEXMFLOCAL $TEXMFSYS CONFIG
```

6 Generate Slides

Use the package beamer to generate a pdf file of slides from an article

Listing 3: Changes in .tex file

```
% \documentclass{article}
\documentclass{beamer}
\usepackage{Madrid}
```