

# $\text{\LaTeX}$ PDF accessibility

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The pdf of this talk and other resources will be posted online, so you don't need to write down what you see here.

Update  $\text{\LaTeX}$ , use

```
\DocumentMetadata{lang=en,tagging=on,pdfstandard=ua-2,  
  tagging-setup={math/setup=mathml-SE,math/alt/use}}  
\documentclass{article}  
...  
\usepackage{unicode-math}  
\title{...}
```

compile with Lua $\text{\LaTeX}$ , and maybe it all works just fine.  
 $\text{math/alt/use} \Leftrightarrow \text{Blackboard Ally}$

Optional warmups:  $\text{\RequirePackage{nag}}$  or  
 $\text{pdfstandard=ua-1,pdfversion=1.7}$  (but not  $\text{math/setup=mathml-SE}$ )

# Basic idea

Use  $\text{\LaTeX}$  so that the output looks how you want it  
**and the input reflects the meaning.**  
(Don't use tabular to position boxes.)

# After the basics — Tables

- `\tagpdfsetup{table/header-rows={...},table/header-columns={...}}`  
outside of the tabular  
(lasts until the group `\ends`)
- `\tagpdfsetup{table/multirow={number of rows}}`
- Interface will probably change

## After the basics — Images

- `\includegraphics[alt={...}]`
- `\tikz[alt={...}]`
- `\begin{tikzpicture}[alt={...}]`
- `\begin{picture}[alt={...}]`

Keep it brief and objective; exposition won't be seen by most students.

Alternatives to `alt={...}` are `artifact` and `actualtext={...}`.

# Tools

To verify that a pdf is accessible:

**Ally, Siteimprove:** (Commercial addons)



easy to pass, checks color contrast



too easy, false negatives

**VeraPDF:** <https://verapdf.org/software>



has command line option; L<sup>A</sup>T<sub>E</sub>X team



no GUI for pdf errors

**PDFix:** <https://pdfix.net>



GUI



no command line

**PAC:** <https://pac.pdf-accessibility.org/en>



Windows only; maxes out at UA-1/1.7; bug with tabular headers



more thorough (pgfplots, multi[row|column])

# Replacements & Adjustments

- `enumitem` & `enumerate` → `enumext` or nothing (new syntax)
- `margin[fit|fix|note]` → `margin[alia|par]`
- Beamer → ltx-talk (lualatex-dev, mostly same syntax)
- Some packages need some (or a lot of) help (`tcolorbox`, `titlesec`, `qrcode`, `media9`, ...)



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## Instructor Information

- See your syllabus in Blackboard for your instructor's information
- Required Materials: ALEKS Access Code & Course Notebook
  - Course Notebook can only be purchased at the UND bookstore.
  - ALEKS access can be purchased directly from ALEKS or at the bookstore.
  - Math 103 has Inclusive Access — see syllabus for more information

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## For more information

- <https://latex3.github.io/tagging-project/documentation/prototype-usage-instructions.html>
- <https://latex3.github.io/tagging-project/tagging-status/>
- texdoc: documentmetadata-support-code, latex-lab-table, enumext, ltx-talk
- <https://www.texdev.net/ltx-talk/examples/>
- Compiling needs more time (x7), RAM (x4), strings&hash entries (x11), larger pdf (x2.5)  
try `\DocumentMetadata{lang=en}` for draft runs
- [https://www.youtube.com/watch?v=Eu\\_qM53tInw&t=5900s](https://www.youtube.com/watch?v=Eu_qM53tInw&t=5900s)  
A before and after example using Foxit, NVDA, and MathCAT

# Current status

| Document                     | BB<br>Ally | UND.edu<br>SiteImprove | PAC<br>UA-1 | VeraPDF |      | LaTeXML |
|------------------------------|------------|------------------------|-------------|---------|------|---------|
|                              |            |                        |             | UA-1    | UA-2 |         |
| Calculus (Apex UND)          | 100%       | Y                      | N           | Y***    | Y*** | "Y"     |
| Linear Algebra (Cherney UND) | 100%       | "Y"                    | Y*          | Y*      | Y*   | Y*      |
| this talk                    | 100%*      | "Y"                    | Y*          | Y*      | Y*   | N       |

"Presumed", \*With help

Calculus: PAC: Multi(row/column), pgfplots

# Examples

| Math                                                                                        | before                                      | after                                                                                                                 |
|---------------------------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| $a^2 + b^2 = c^2$                                                                           | ay two plus bee two equals cee two          | ay squared plus bee squared is equal to cee squared                                                                   |
| $\begin{pmatrix} a & b \\ c & d \end{pmatrix}^{-1}$                                         | minus one list with one item ay bee cee dee | two lines line one ay bee line two cee dee to the negative one power                                                  |
| $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$ | three four one two zero one one one         | the two by two matrix row one one two row two three four times the two by two matrix row one one one row two zero one |

# Promised Resources

`https://sites.und.edu/timothy.prescott/accessible`

