LaTeX on the Web

1 MathJax

Including mathematics on web pages with MathJax is as easy as including the this code in the HTML document (usually between `<head>` and `</head>` at the top of the HTML):

```
<script type="text/javascript"
 src="https://cdnjs.cloudflare.com/ajax/libs/mathjax/2.7.5/MathJax.js?config=TeX-AMS_HTML">
</script>
```

This code allows mathematics symbols and standard AMS environments (such as `align`, `bmatrix`, `cases`, etc.) can be typed directly into the HTML document. The default settings of MathJax do not interpret dollar signs as enclosing mathematics, so unless settings are changed then mathematics must be enclosed within `\(..\)`, `\[..\]`, `\begin{equation}..\end{equation}`, etc.

Read the documentation at `https://docs.mathjax.org/en/latest/index.html` to discover how to customize MathJax. One example of such a customization is the script

```
</script>
<script type="text/x-mathjax-config">
    MathJax.Hub.Config({
        displayAlign: "center",
        displayIndent: "0em",
        "HTML-CSS": { scale: 100,
                      linebreaks: { automatic: "false" },
                      availableFonts: [],
                      webFont: "TeX" },
        SVG: {scale: 100,
              linebreaks: { automatic: "false" },
              font: "TeX"},
        NativeMML: {scale: 100},
        TeX: { equationNumbers: {autoNumber: "AMS"},
               MultLineWidth: "85%",
               TagSide: "right",
               TagIndent: ".8em" }});
</script>
```

which should appear before the code calling MathJax.

An alternative to MathJax is KaTeX, which claims to have some benefits over MathJax. Visit `https://katex.org/` for more details.

2 Exporting to HTML

A LaTeX file can be converted into HTML (or other file formats) using either Pandoc or LaTeXML.

Neither one of these tools preserves the font choices called from packages like `mathspec` or `fontspec`, so do not load such packages. Fonts, colors, and the overall style in HTML is best selected using CSS files after converted to HTML.

2.1 Pandoc

Pandoc is software that converts one markup format to another. Please visit https://pandoc.org/ to install. Read the documentation (or `man pandoc` on Linux) to learn how to run pandoc.

If using Linux, a shell command such as

```
pandoc file.tex -f latex -t HTML > file.html
```

turns a LaTeX file into an HTML file. Any mathematics in this HTML file is kept as LaTeX commands which can then be converted into mathematical symbols using MathJax.

Pandoc simply interprets the LaTeX document structure as a HTML document structure. It does not actually run LaTeX or load any packages. Therefore Pandoc does not preserve labels, numbering, and cannot generate graphics with TikZ. Pandoc is best for straightforward LaTeX documents.

2.2 LaTeXML

LaTeXML is a robust LaTeX converter that attempts to faithfully recreate a LaTeX document as HTML. It interacts well with labels, numbering, BibTeX and TikZ. Please visit https://dlmf.nist.gov/LaTeXML/ to install. Read the documentation (or `man latexml` and `man latexmlpost` on Linux) to learn how to run LaTeXML.

The LaTeXML software converts LaTeX to the XML file format. Then the XML file can then be converted to HTML using the latexmlpost command. For example, a file can be converted using the shell commands

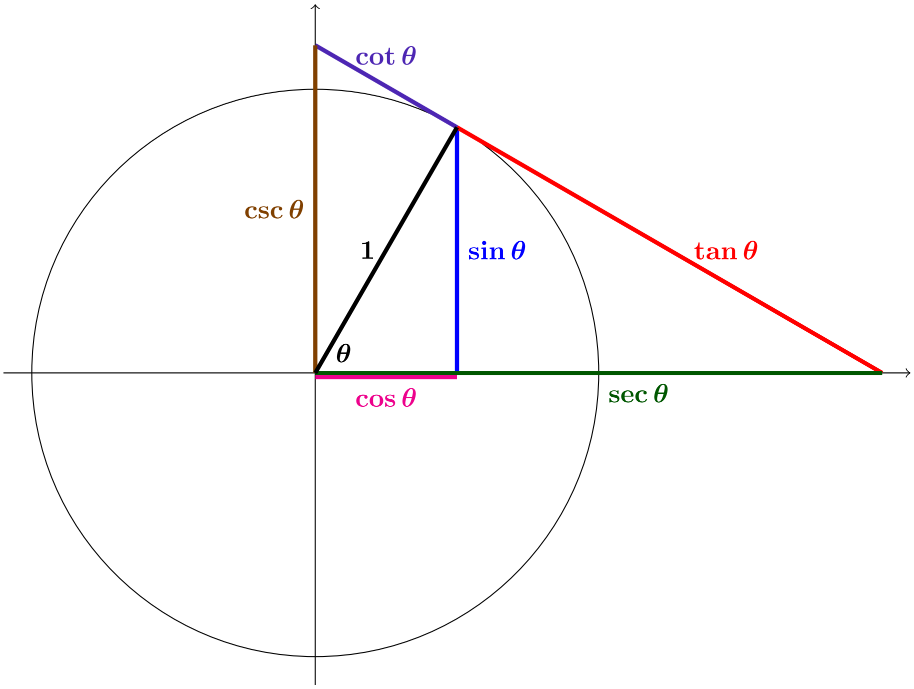
```
latexml file.tex --destination="file.xml"
latexmlpost file.xml --destination="file.html" --css="file.css"
```

The optional `--css="file.css"` allows for the addition of a custom CSS format to be included into the auxiliary CSS files that are created when these two commands are run.

This is how the web page you are reading was created, specifically using the commands

```
latexml 351Week9HTML.tex --destination="351Week9LatexmlOutput.xml"
latexmlpost 351Week9LatexmlOutput.xml
   --destination="351Week9LatexmlOutput.html"
   --css="351Week9Mendes.css"
```

This method can even turn tikz pictures into images for the web!: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$\sin\theta$
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