Beamer Slides using Pandoc and Markdown

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Introduction

`pandoc`

`pandoc-crossref` filter

`pandoc-citeproc` filter

Introduction

Why and Why not

Why Markup Language?

- Separate “content” with “style”.

Why Pandoc and Beamer?

- For professional presentation.
- Tikz diagrams.
- Cross reference

A simple example `intro.md`

```
---
title: Beamer Slides using Pandoc and Markdown
author: Wai-Shing Luk
bibliography: papers.bib
...

# Introduction {#sec:intro}

## Why and Why not

### Why Markup Language?

-   Separate "content" with "style".

### Why Beamer?

-   For professional presentation.
-   Tikz diagrams.
```

pandoc

pandoc

Pandoc is a Haskell library for converting from one markup format to another[1], and a command-line tool that uses this library. It can read Markdown and write LaTeX or Beamer.

To compile:

```
$ pandoc -s -t beamer beamer.yaml intro.md -o intro.tex
```

or directly to a pdf file:

```
$ pandoc -t beamer beamer.yaml intro.md -o intro.pdf
```

[1] This is a footnote.

A simple header `beamer.yaml`

```yaml
---
fontsize: 10pt
classoption:
  - serif,onlymath
institute: Fudan University
date: \today
link-citations: true
colorlinks: true
header-includes:
  - \usetheme{default}
  - \usepackage{tikz,pgf,pgfplots}
  - \usetikzlibrary{arrows}
  - \definecolor{qqqqff}{rgb}{0.,0.,1.}
  - \newcommand{\columnsbegin}{\begin{columns}}
  - \newcommand{\columnsend}{\end{columns}}
  - \newcommand{\col}[1]{\column{#1}}
  - \pgfdeclareimage[height=0.5cm]{fudan-logo}{fudan-logo.jpg}
  - \logo{\pgfuseimage{fudan-logo}}
...
```

Render Mathematical Equations using LaTeX

```
Consider the following problem:

$$\begin{array}{ll}
  \text{minimize}    & f_0(x), \\
  \text{subject to}  & F(x) \succeq 0,
\end{array}$$ {#eq:semidef}

- $F(x)$: a matrix-valued function
- $A \succeq 0$ denotes $A$ is
  positive semidefinite.
```

Consider the following problem:

$$\begin{array}{ll} \text{minimize} & f_0(x), \\ \text{subject to} & F(x) \succeq 0, \end{array} \tag{1}$$

- $F(x)$: a matrix-valued function
- $A \succeq 0$ denotes A is positive semidefinite.

How to make a two-column slide

```
\columnsbegin

\col{0.5\textwidth}

  Left-hand side

\col{0.5\textwidth}

  Right-hand side

\columnsend
```

Figures

An image occurring by itself in a paragraph will be rendered as a figure with a caption.

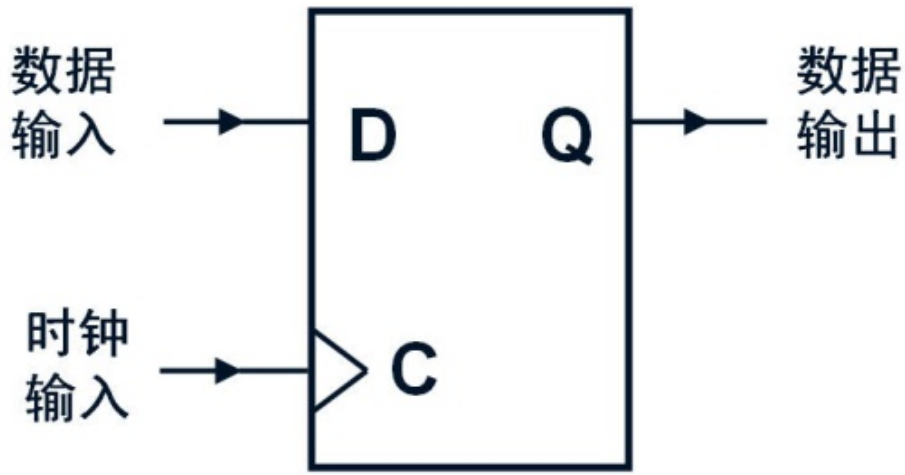


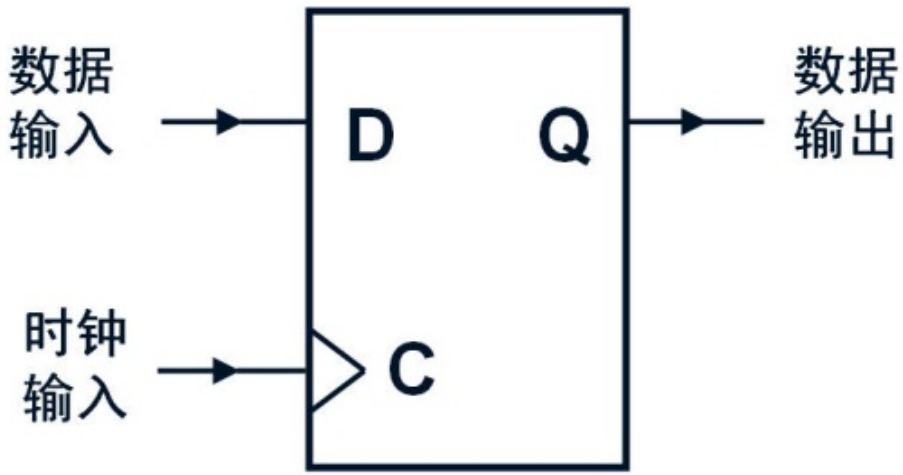
Figure 1: This is the caption

(source)

```
![This is the caption](media/image2.jpeg){#fig:figure0}
```

Figures (cont'd)

If you just want a regular inline image, just make sure it is not the only thing in the paragraph. One way to do this is to insert a nonbreaking space after the image:



(source)

```
![No caption](media/image2.jpeg)\
```

Render Diagrams using Tikz

```
\begin{figure}[hp]
\centering
\input{pole2polar.tikz}
\caption{Example of constructing
    the polar of a point}%
\label{fig:pole2polar}
\end{figure}
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Figure 2: Example of constructing the polar of a point

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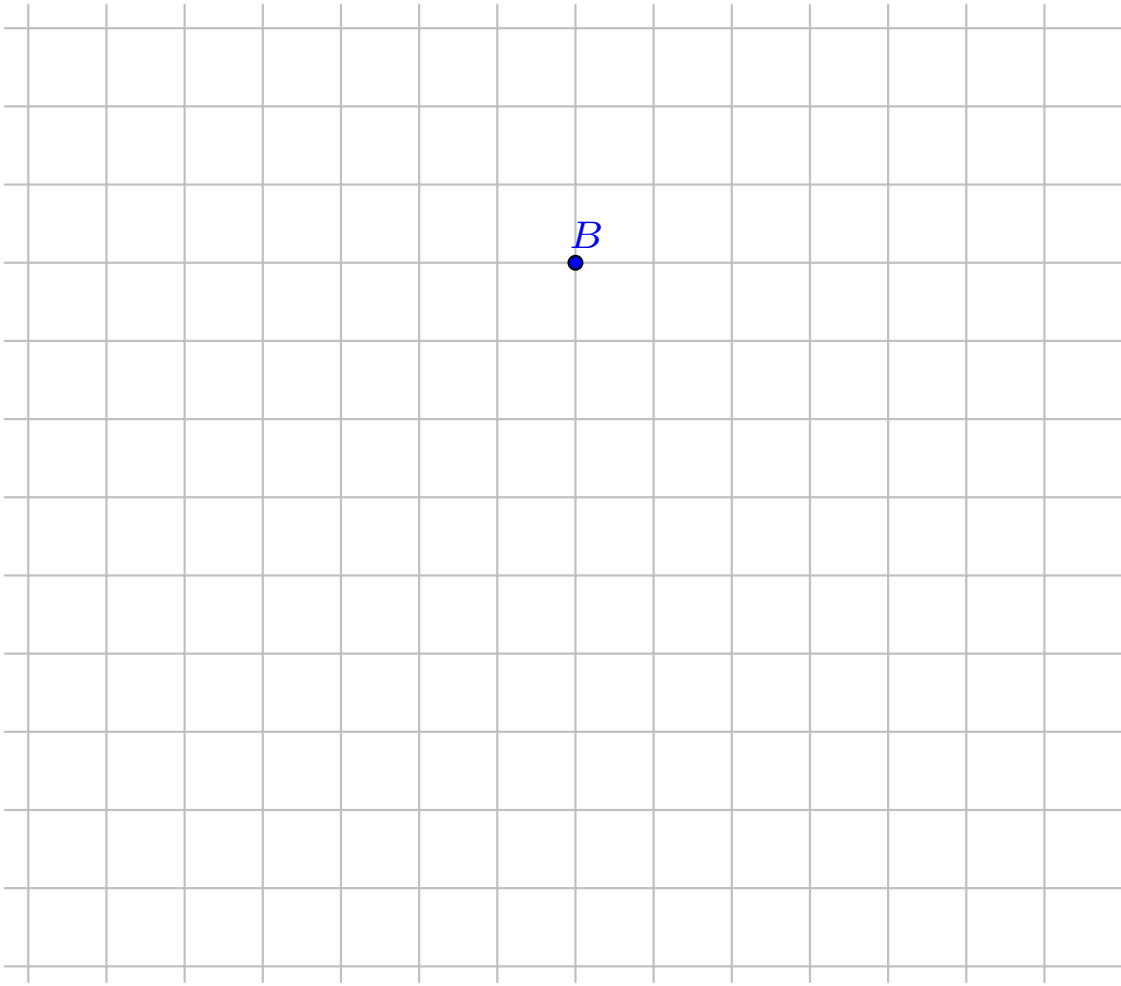

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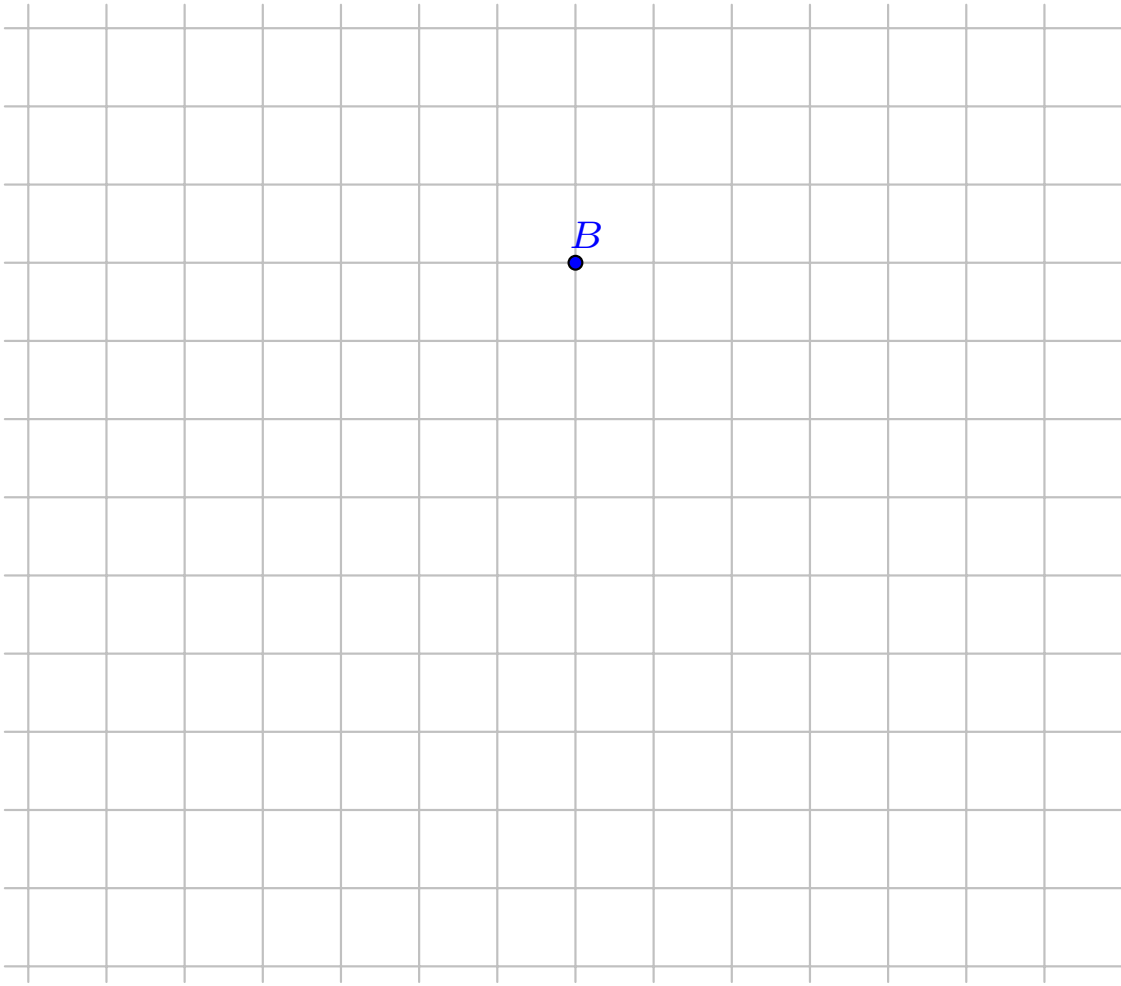

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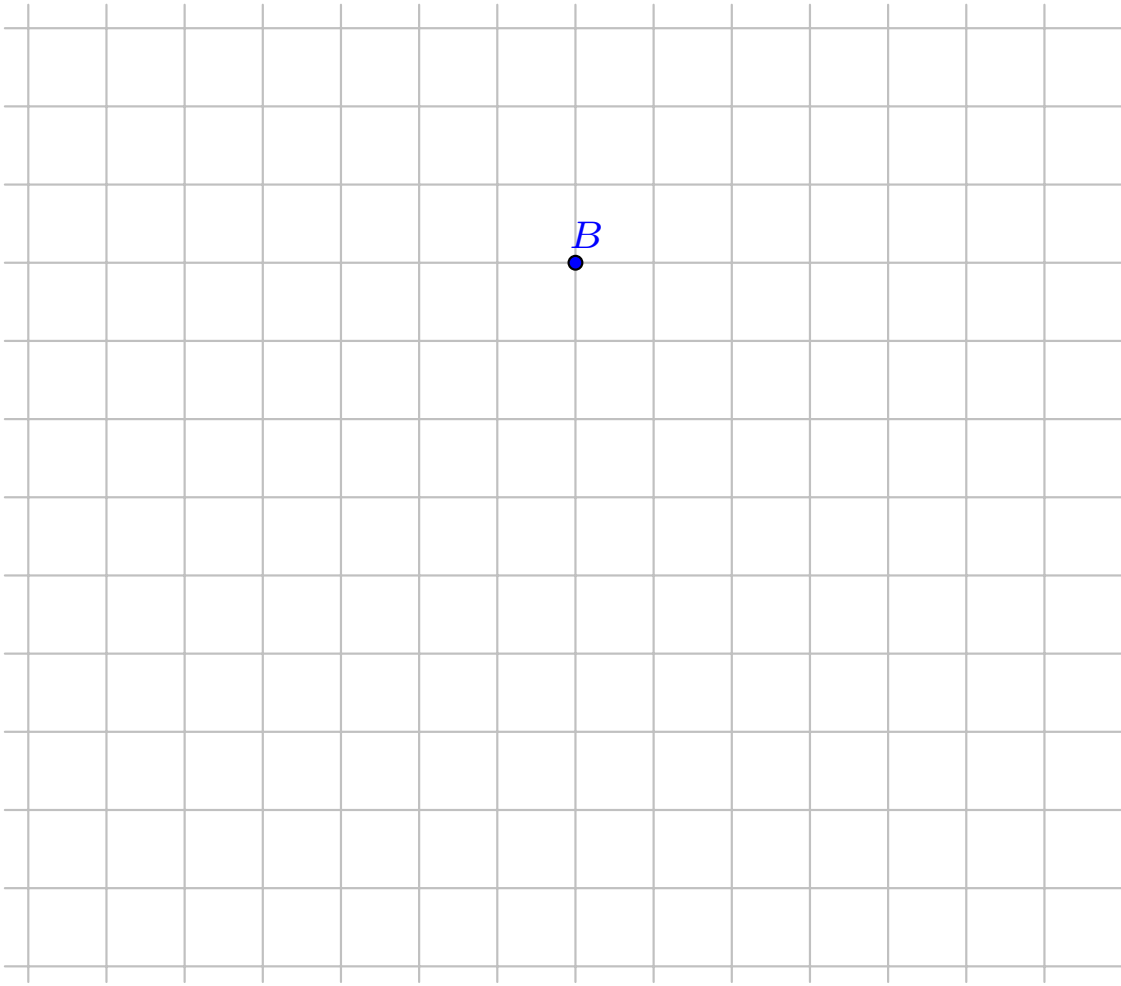

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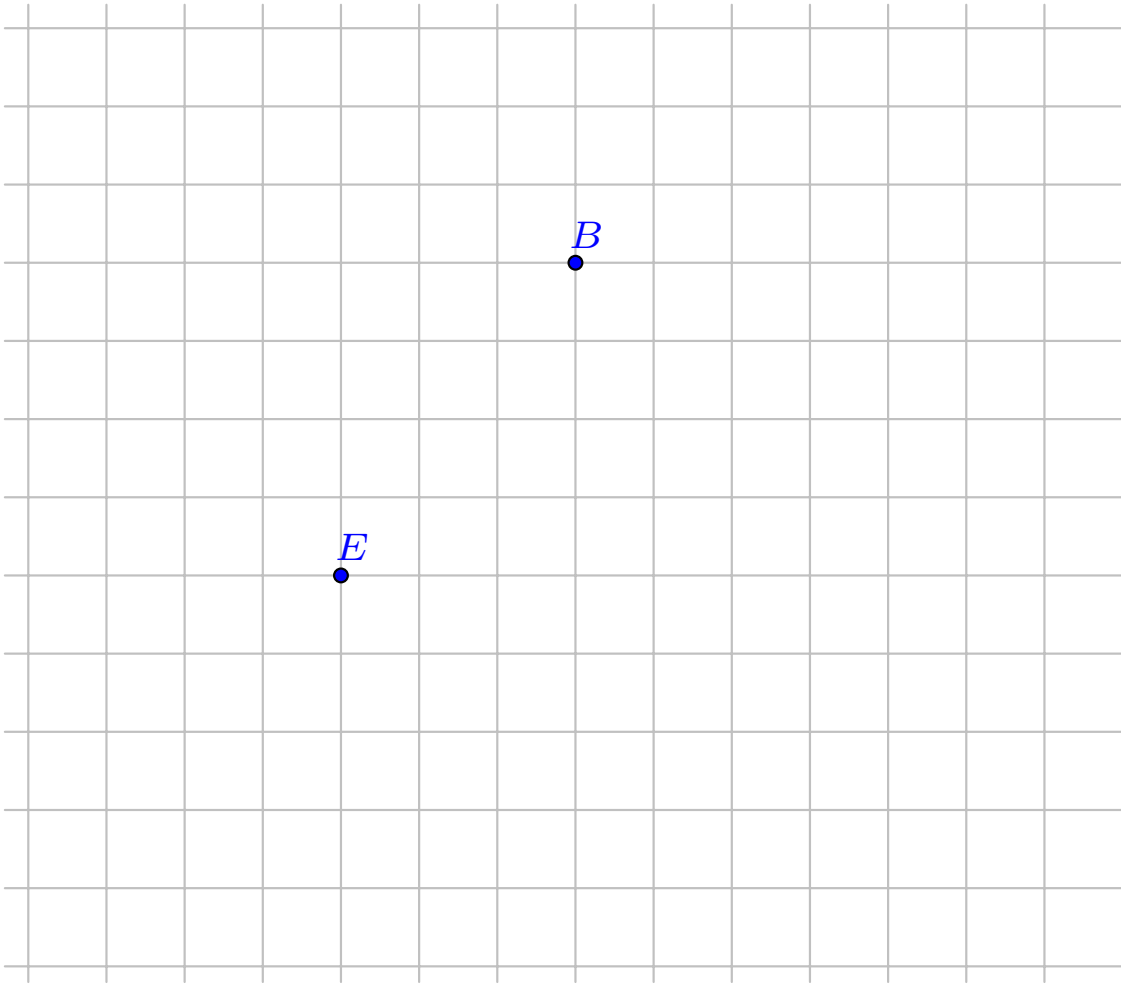

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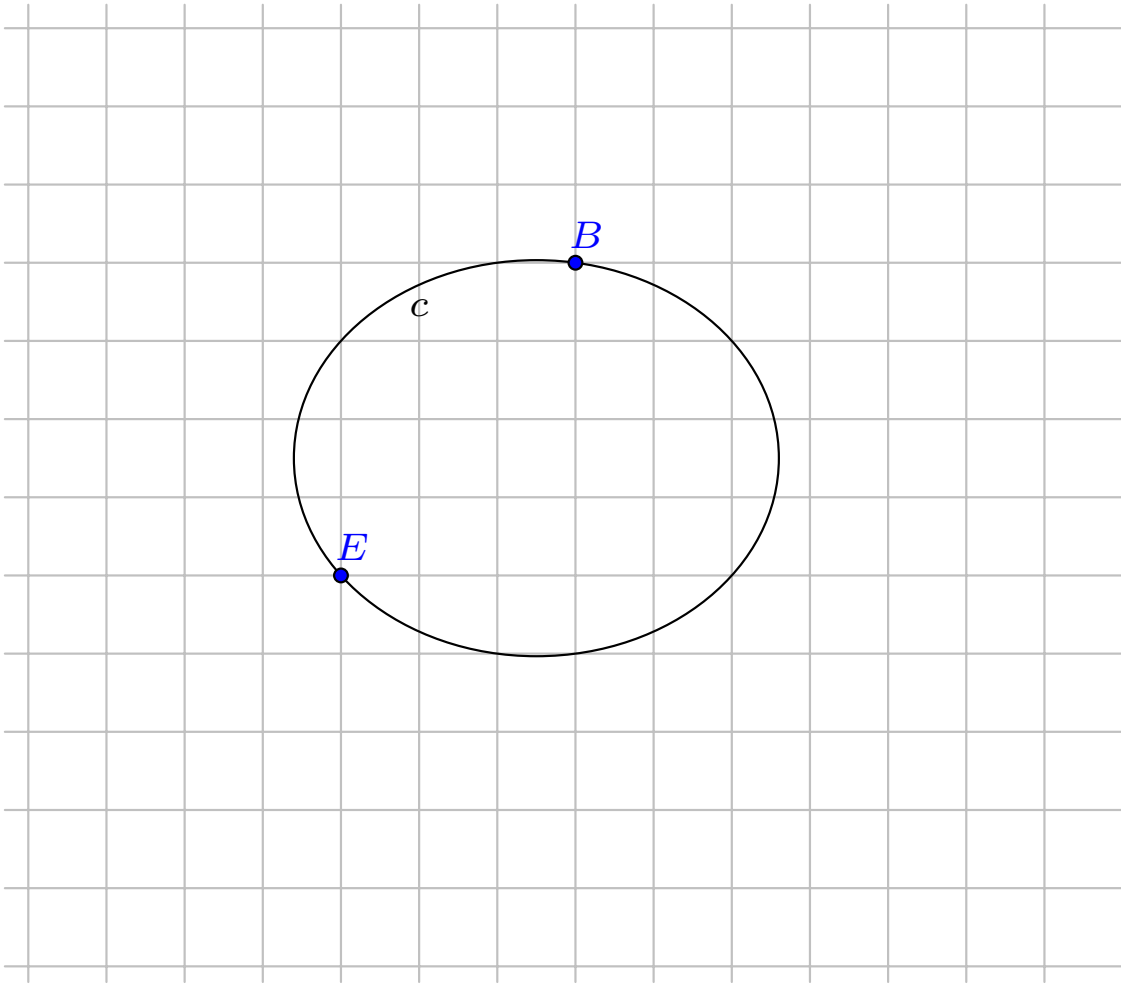

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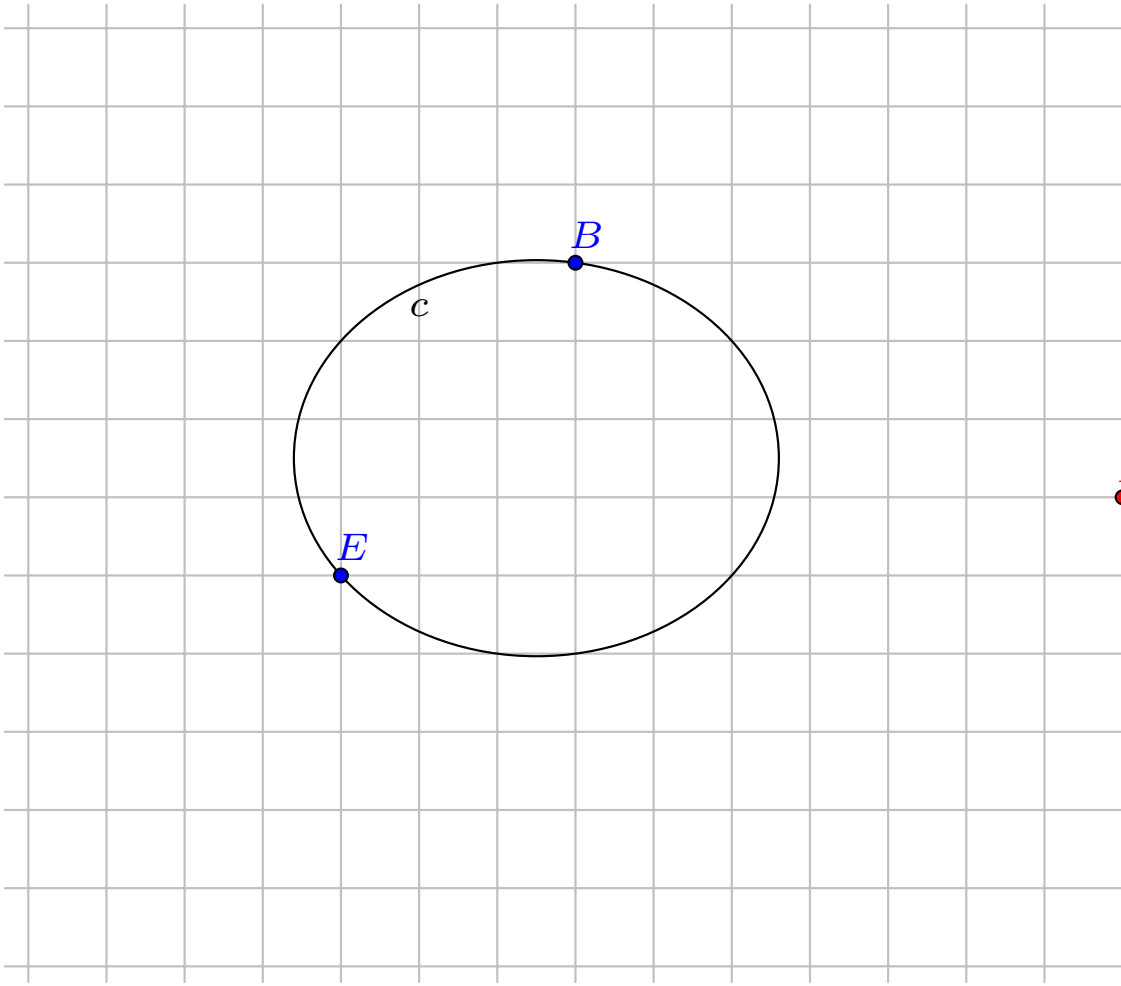

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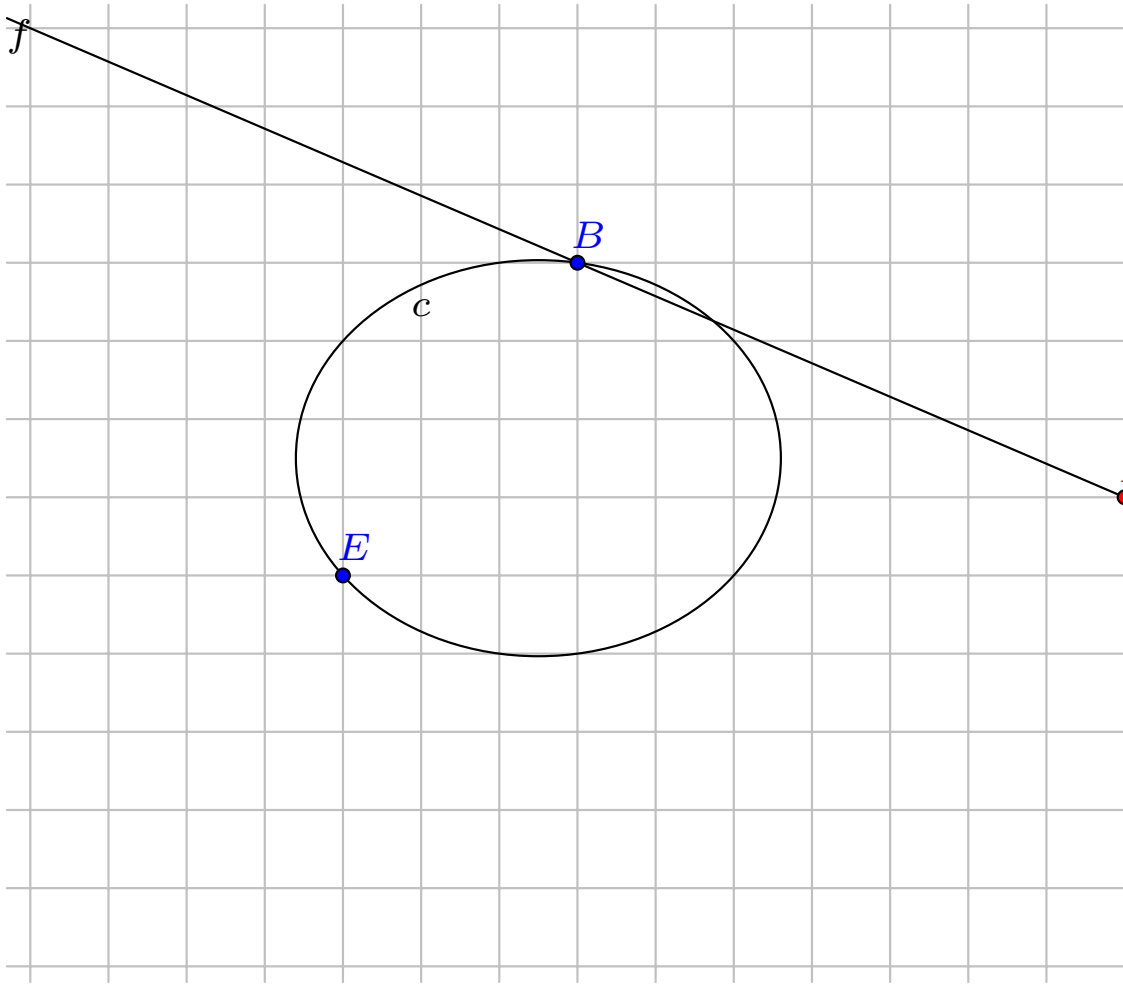

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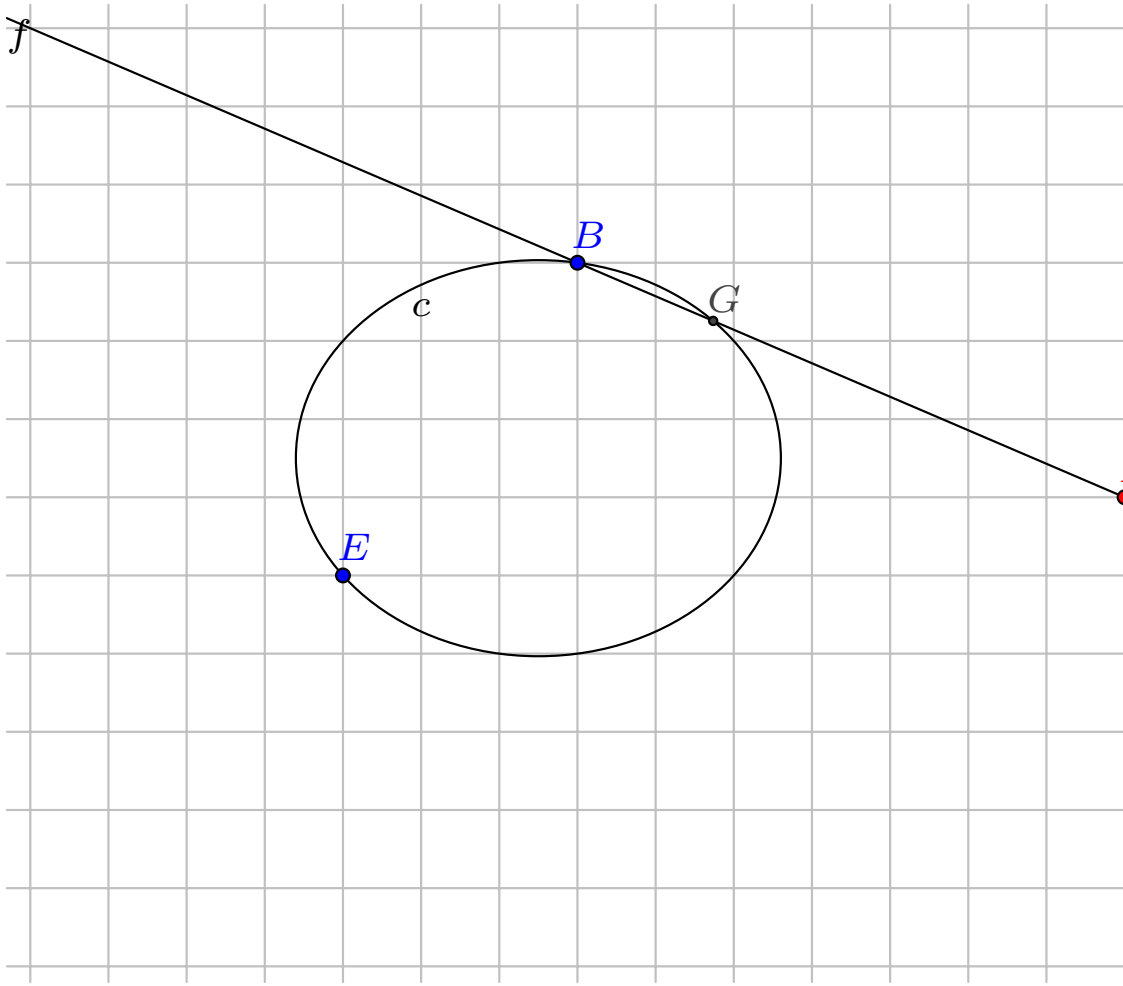

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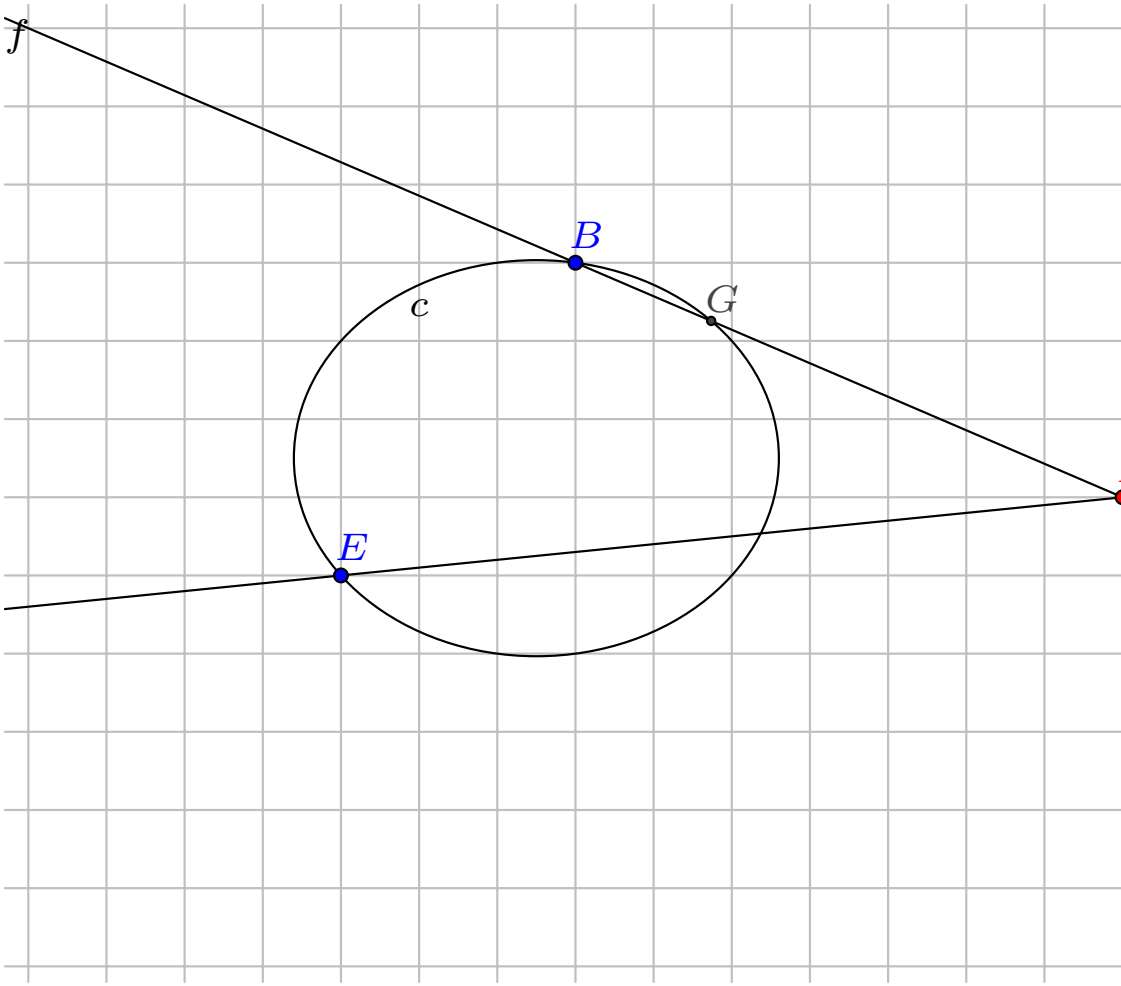

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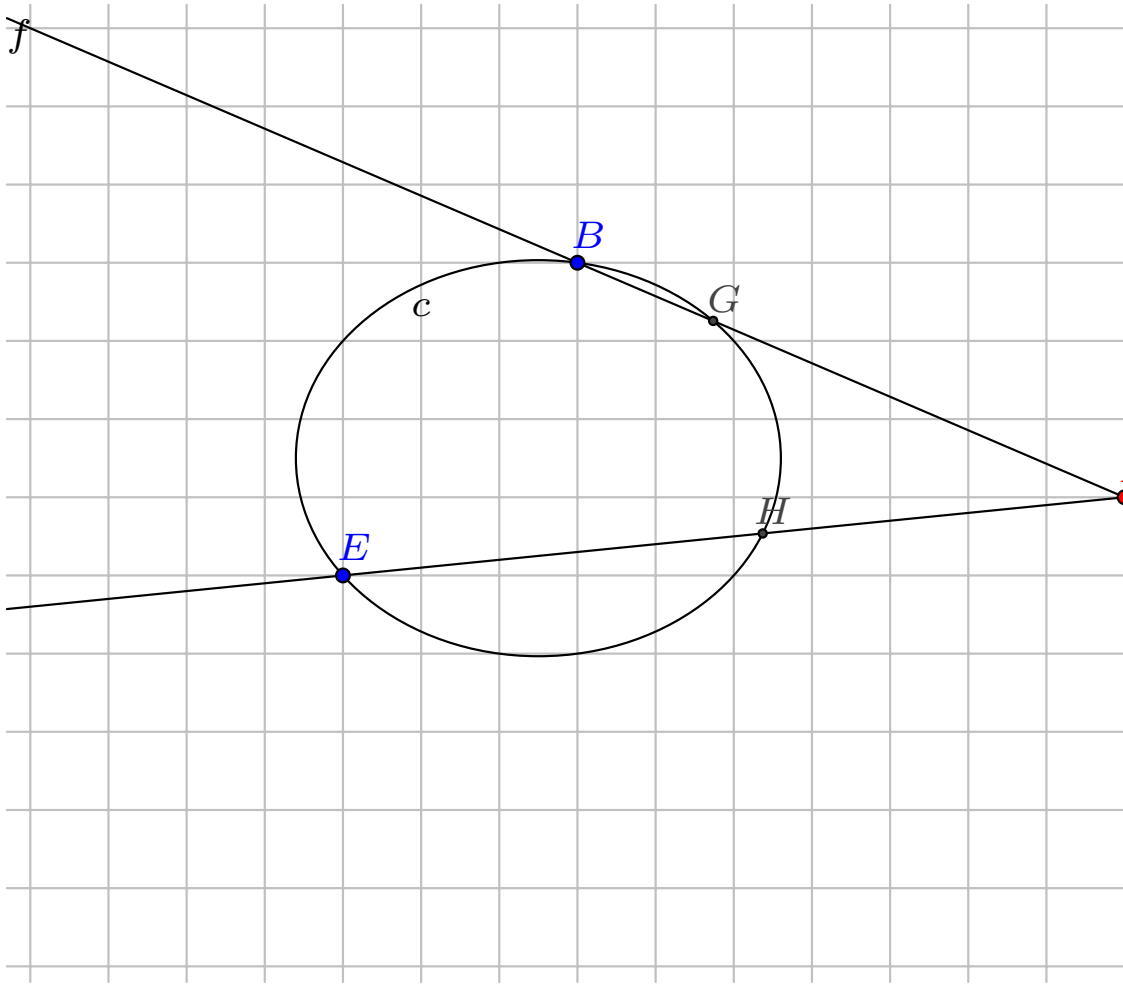

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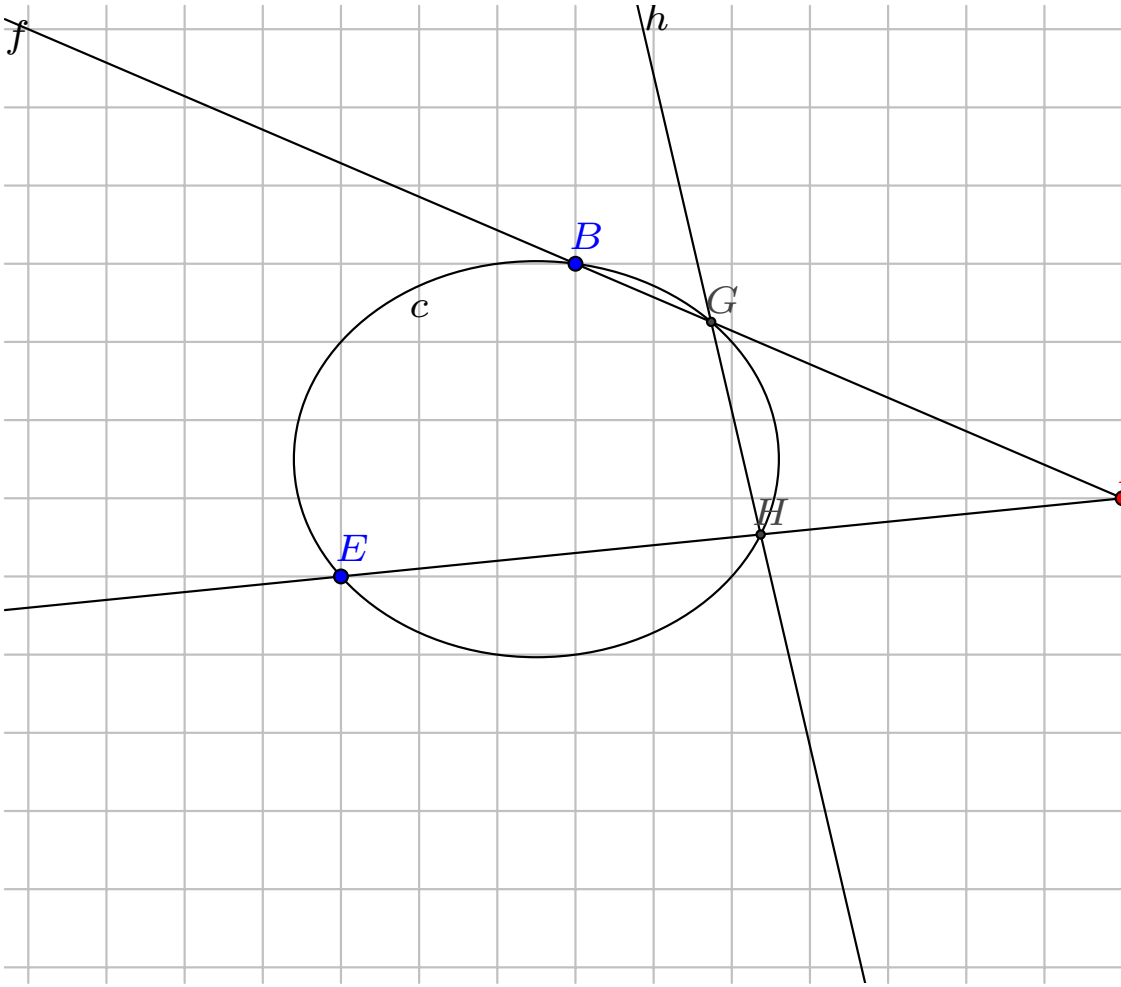

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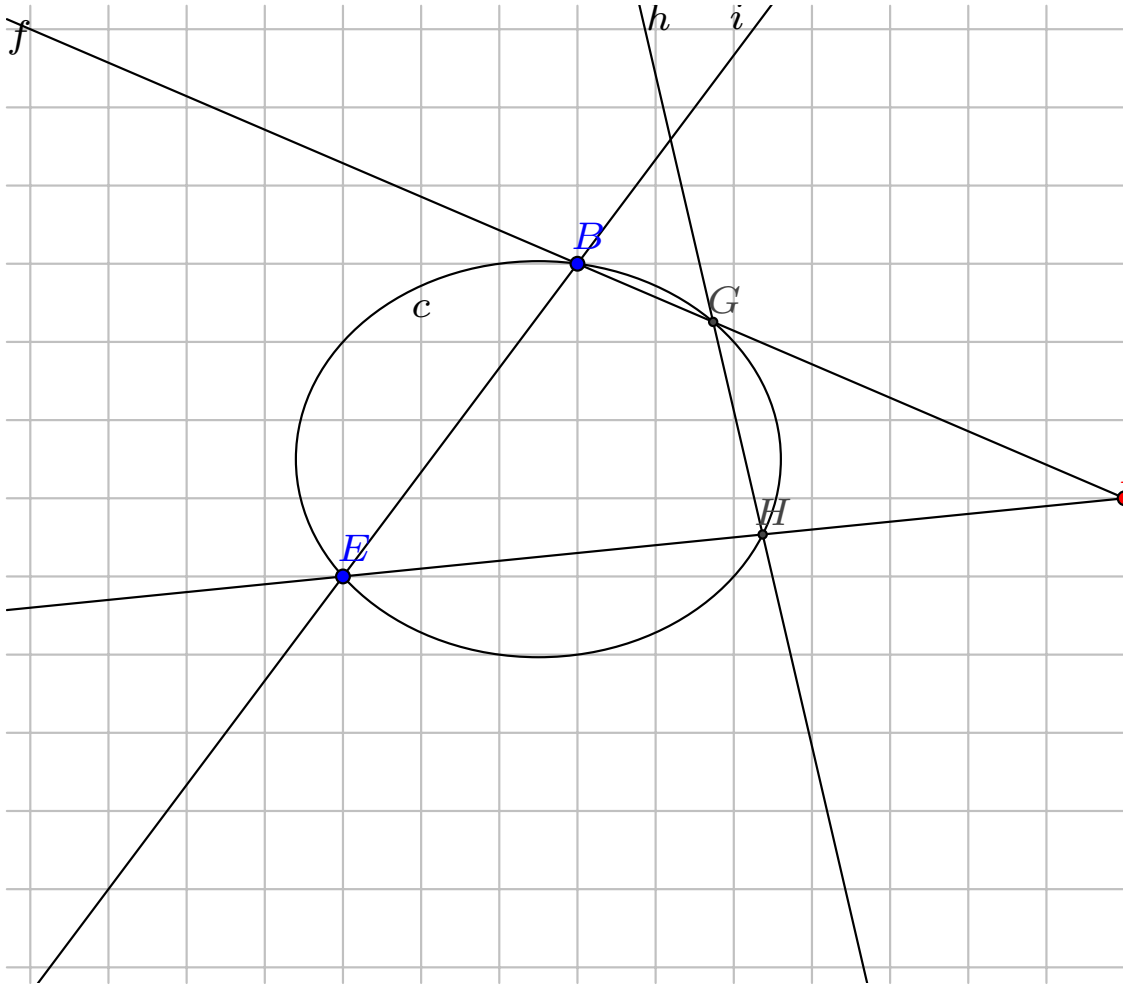

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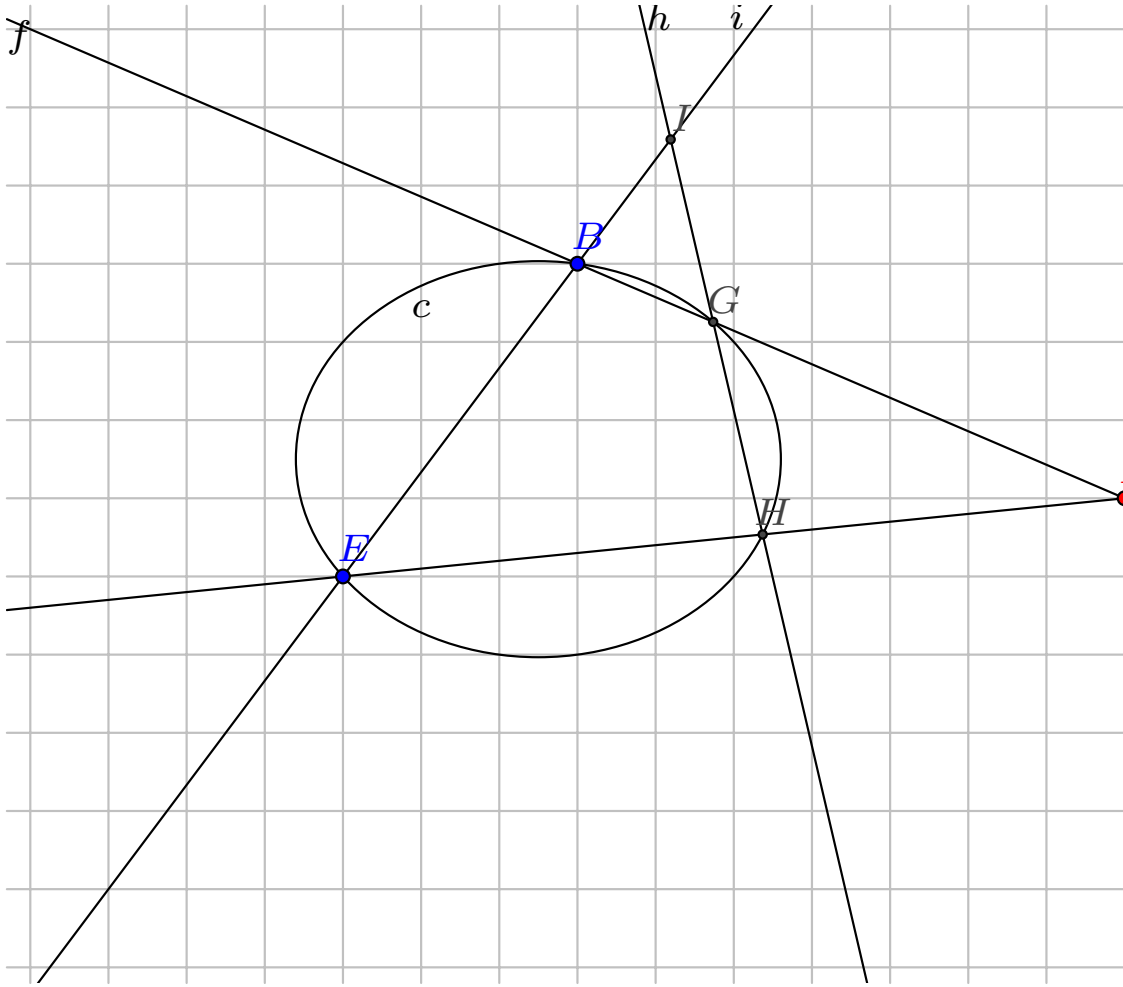

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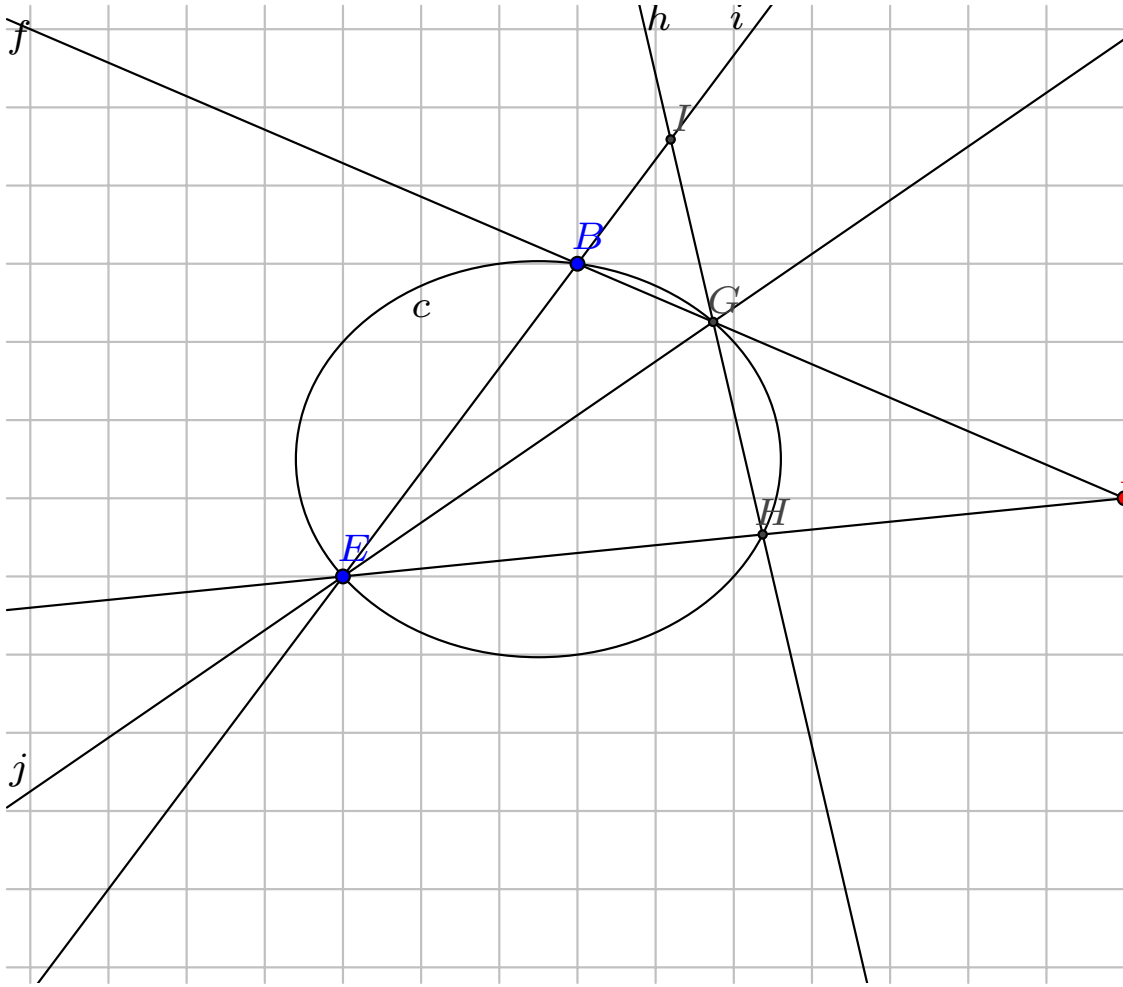

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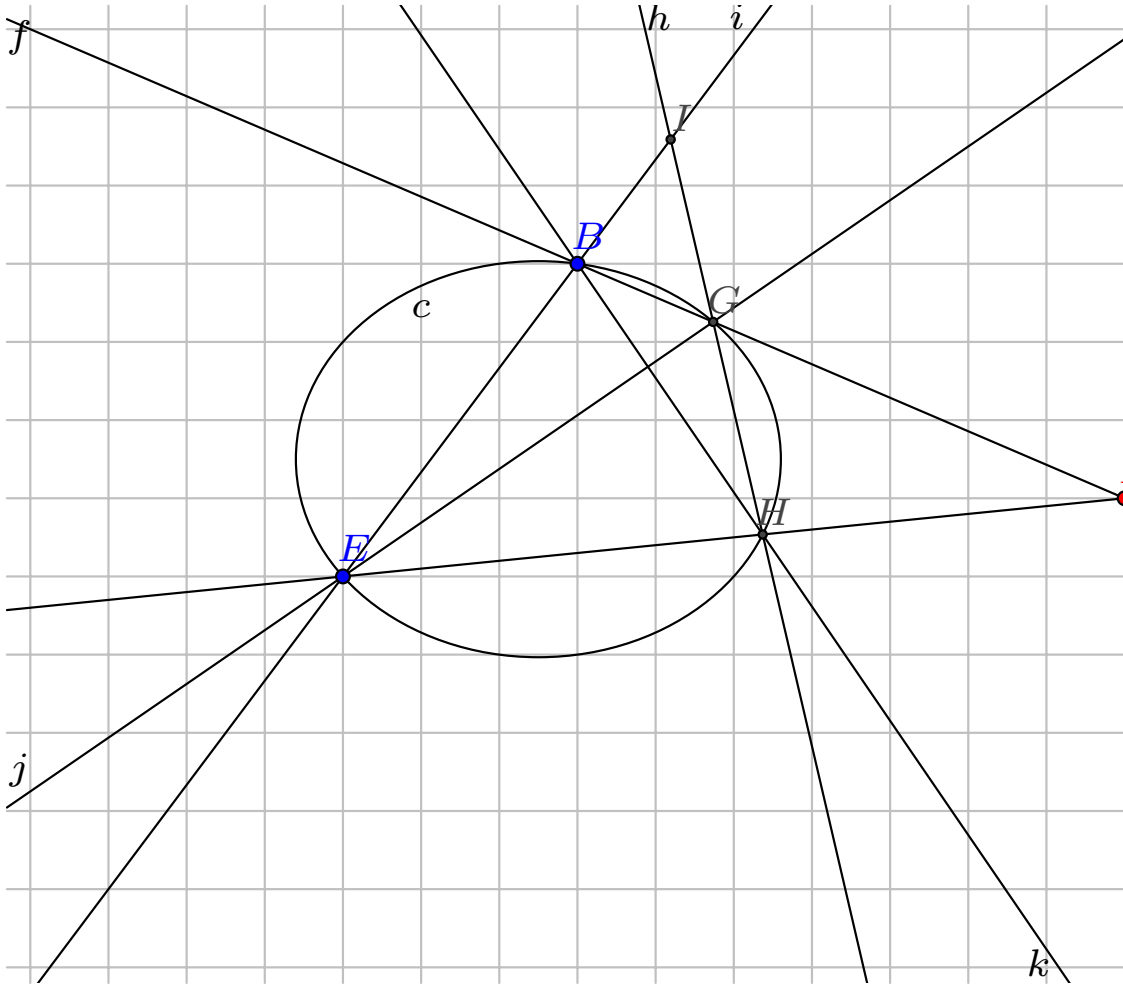

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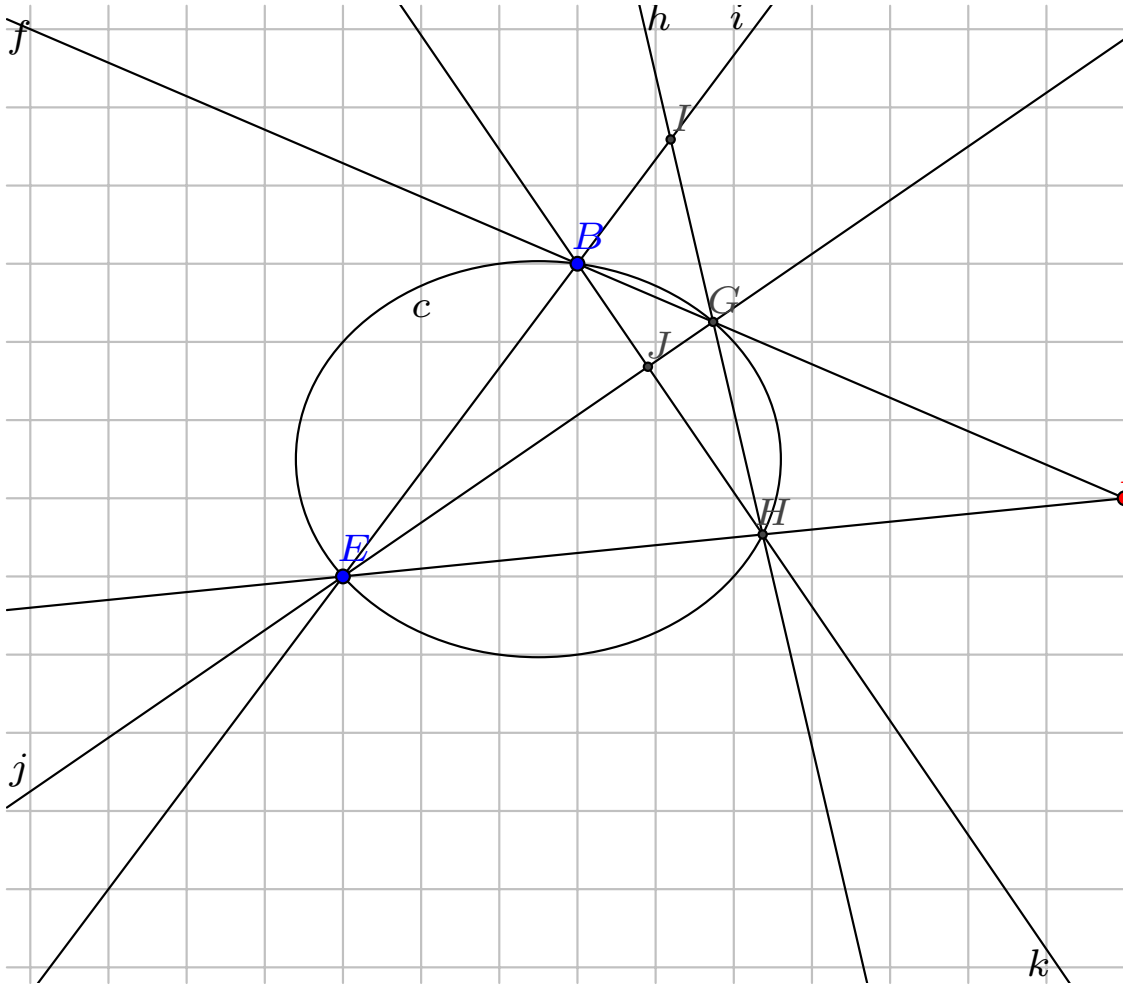

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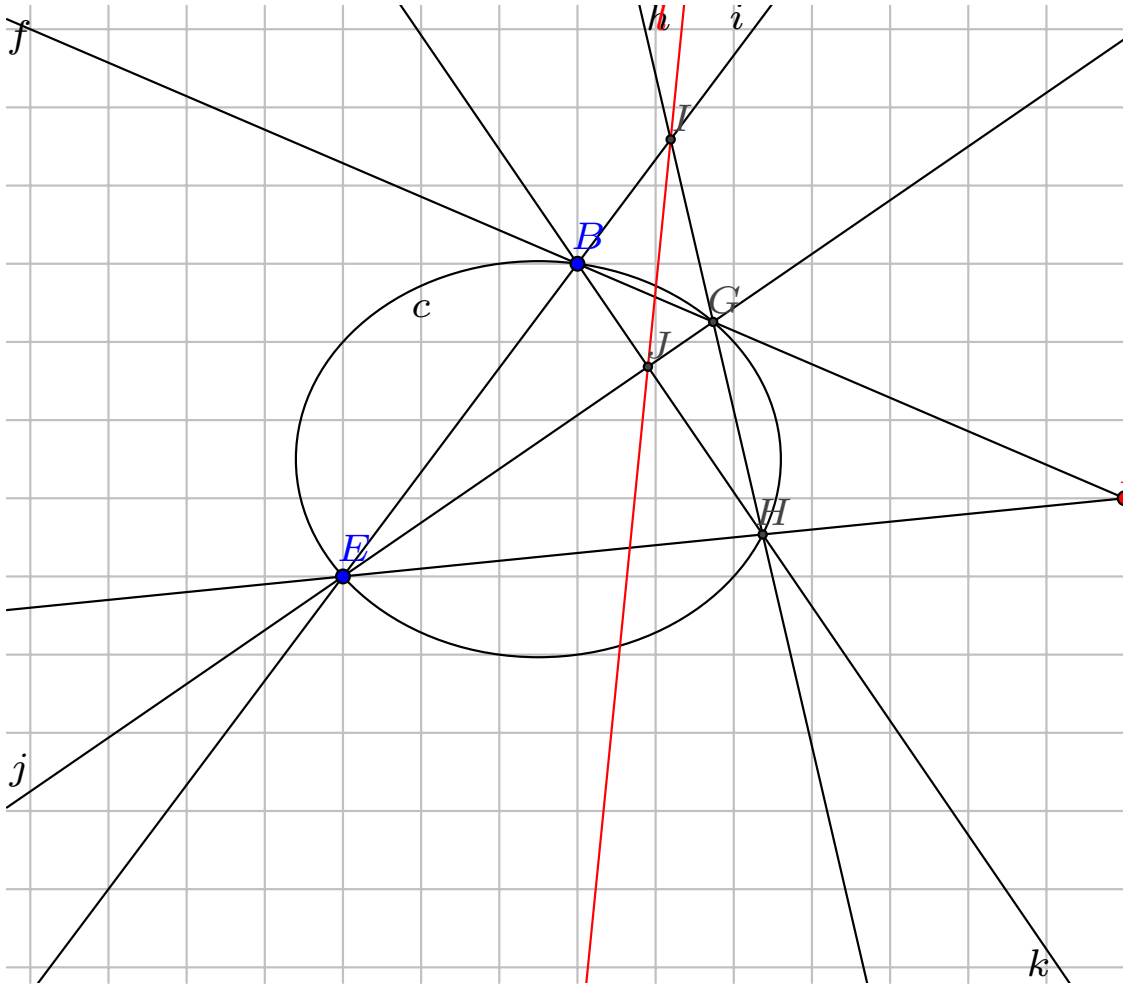

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Table

Simple tables can be generated using Markdown.

```
| Costs         |   28nm     |    20nm     |
|---------------|------------|-------------|
| Fab Costs     | 3B         |  4B - 7B    |
| Process R&D   | 1.2B       | 2.1B - 3B   |
| Mask Costs    | 2M - 3M    | 5M - 8M     |
| Design Costs  | 50M - 90M  | 120M - 500M |

: Fab, process, mask, and design
  costs {#tbl:fab}
```

Table 1: Fab, process, mask, and design costs

Costs	28nm	20nm
Fab Costs	3B	4B - 7B
Process R&D	1.2B	2.1B - 3B
Mask Costs	2M - 3M	5M - 8M
Design Costs	50M - 90M	120M - 500M

`pandoc-crossref` filter

`pandoc-crossref` filter

With this filter, you can cross-reference figures (see Fig. 1 and Fig. 2), display equations (see Eq. 1), tables (see Table 1) and sections (§ 1, 2.1)

There is also support for code blocks, for example, Listing 1, 2.

To compile:

```
$ pandoc -F pandoc-crossref -t beamer beamer.yaml \
  crossref.yaml beamer.md -o intro.pdf
```

A sample `crossref.yaml`

```yaml
---
cref: True
codeBlockCaptions: True
lofTitle: "## List of Figures"
lotTitle: "## List of Tables"
autoSectionLabels: True
figureTemplate: $$t$$
tableTemplate: $$t$$
figPrefix:
  - "Fig."
eqnPrefix:
  - "Eq."
tblPrefix:
  - "Table"
lstPrefix:
  - "Listing"
secPrefix:
  - "§"
...
```

Code blocks

There are a couple options for code block labels. Those work only if code block id starts with `lst:`, e.g. `{#lst:label}`

`caption` attribute

`caption` attribute will be treated as code block caption. If code block has both id and `caption` attributes, it will be treated as numbered code block.

Listing 1: Listing caption A

```haskell
main :: IO ()
main = putStrLn "Hello World!"
```

(source)

```
{#lst:captionAttr .haskell caption="Listing caption A"}
```

Table-style captions

Enabled with `codeBlockCaptions` metadata option. If code block is immediately adjacent to paragraph, starting with `Listing:` or `:`, said paragraph will be treated as code block caption.

Listing 2: Listing caption B

```
main :: IO ()
main = putStrLn "Hello World!"
```

`pandoc-citeproc` filter

Bibliography

- See Aalst, Weijters, and Maruster (2004), or
- See (Baldi et al. 2008; Canfora and Cerulo 2005).

(source)

```
- See @Aalst-etal_2004, or
- See [@Baldi-etal_2008;@Canfora-Cerulo_2005a].
```

To compile:

```
$ pandoc -F pandoc-crossref -F pandoc-citeproc -t beamer \
  beamer.yaml crossref.yaml beamer.md -o intro.pdf
```

References I

Aalst, W. van der, T. Weijters, and L. Maruster. 2004. "Workflow Mining: Discovering Process Models from Event Logs." *IEEE Transactions on Knowledge and Data Engineering* 16 (9). Los Alamitos, CA, USA: IEEE Computer Society:1128–42. https://doi.org/10.1109/TKDE.2004.47.

Baldi, Pierre F, Cristina V Lopes, Erik J Linstead, and Sushil K Bajracharya. 2008. "A Theory of Aspects as Latent Topics." In *ACM Sigplan Notices*, 43:543–62. 10. ACM. https://doi.org/10.1145/1449955.1449807.

Canfora, G., and L. Cerulo. 2005. "Impact Analysis by Mining Software and Change Request Repositories." In *11th Ieee International Software Metrics Symposium (Metrics'05)*, 29. Como, Italy: IEEE. https://doi.org/10.1109/METRICS.2005.28.