

$$2ab + b^2$$

# Voice Recognition & Mathematics

Reclaiming a Lost Technology

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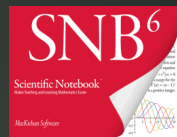


$$\sim(p, q) \equiv \sim p \vee \sim q$$

$$\tanh(z) = -i \tan(iz)$$

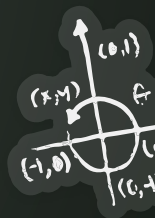
$$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}$$

# Motivations



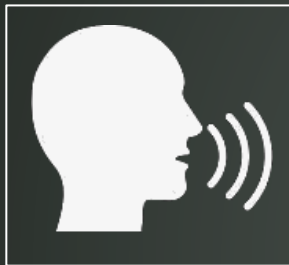
- Resources come and go due to **proprietary code**.
- **Diversity**: Students with disabilities, access to STEM
- Access to **professionals** who sustain injuries
- College **disability offices** unaware of accessibility resources

$$\operatorname{sech}(z) = \frac{1}{\cosh(z)}$$



# Previously

Speak



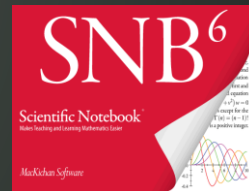
Voice to Text



Text to Math

MATH TALK™

Math  
Typesetting



Scientific  
Notebook

$Sec(2) = Sec(12)$

$(x, y)$   
 $(x_2, y_2)$

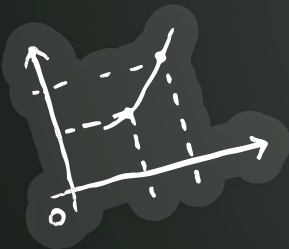
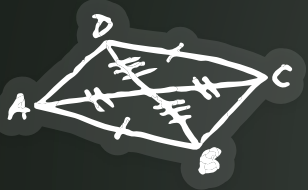
$[x_1, y_1], [x_2, y_2]$



$$\operatorname{cosh}(z) = \frac{1}{2} \ln \left( \frac{z+1}{z-1} \right)$$

$$S^2 = \frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N}$$

$$\forall x \forall y [p(x,y)] \equiv \exists x \exists y [\neg p(x,y)] \quad \operatorname{tanh}(z) = -i \tan(iz)$$

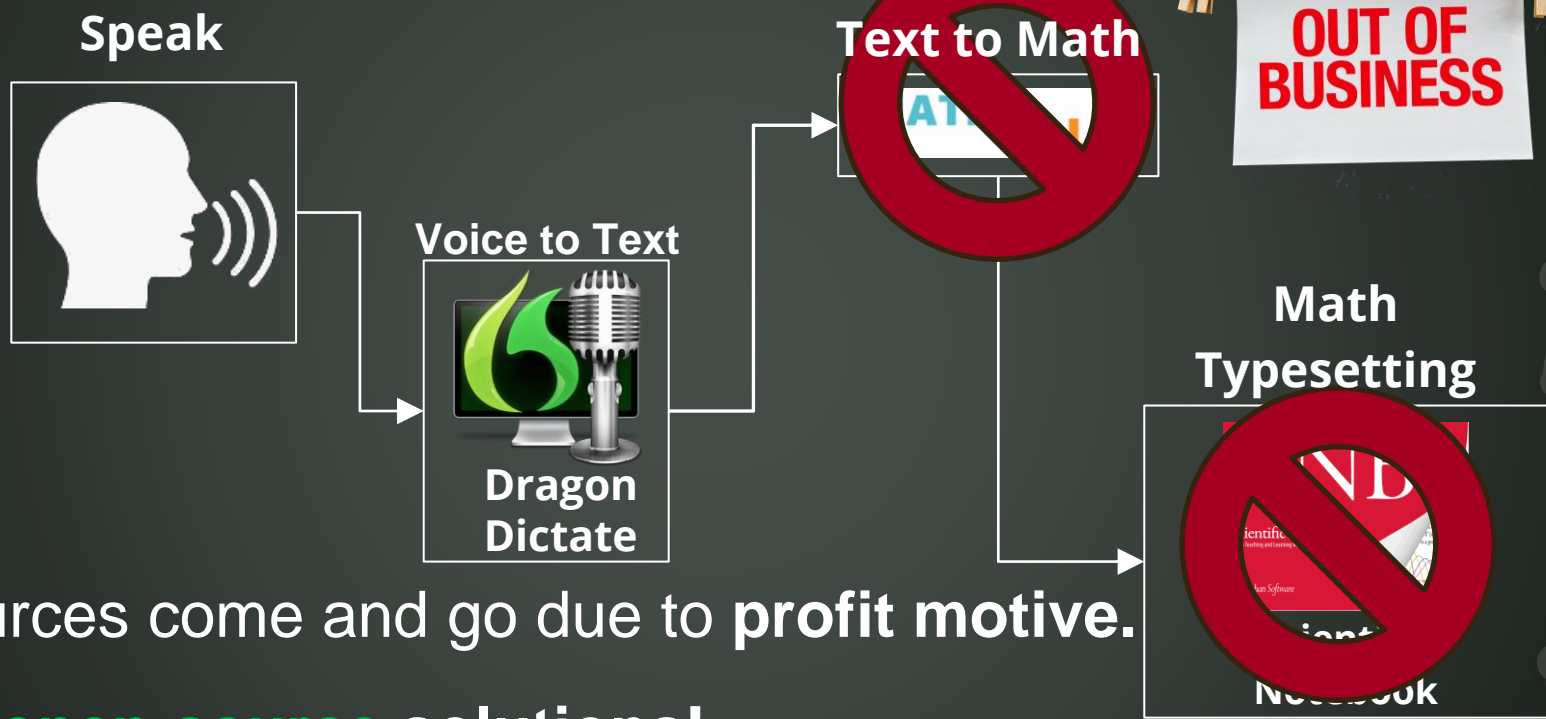


# DEMO

$$\operatorname{arccosh}(z) = \frac{1}{2} \ln \left( \frac{z+1}{z-1} \right)$$

$$\left[ \frac{\frac{n}{2} - F}{f} \right]$$

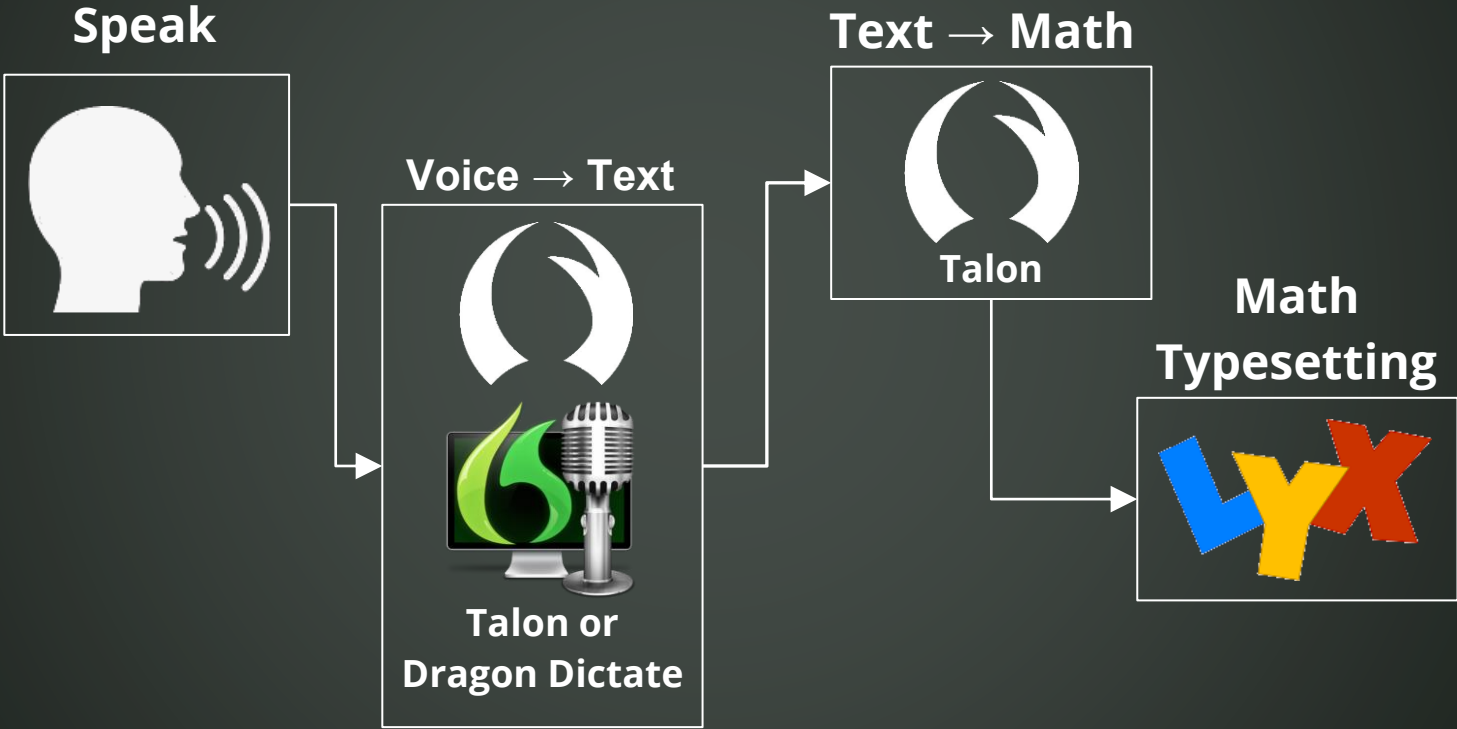
# Previously



Resources come and go due to profit motive.

Need **open-source** solutions!

# NOW



$\text{sech}(z) = \frac{1}{\cosh(z)}$

$(x, y)$   
 $(x_2, y_2)$

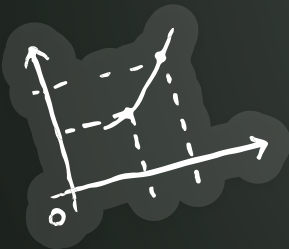
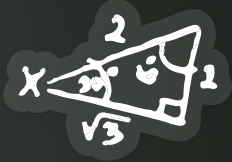
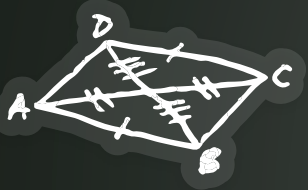
$[x_1, x_2] \times [y_1, y_2]$



$$\operatorname{cosh}(z) = \frac{1}{2} \ln \left( \frac{z+1}{z-1} \right)$$

$$S^2 = \frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N}$$

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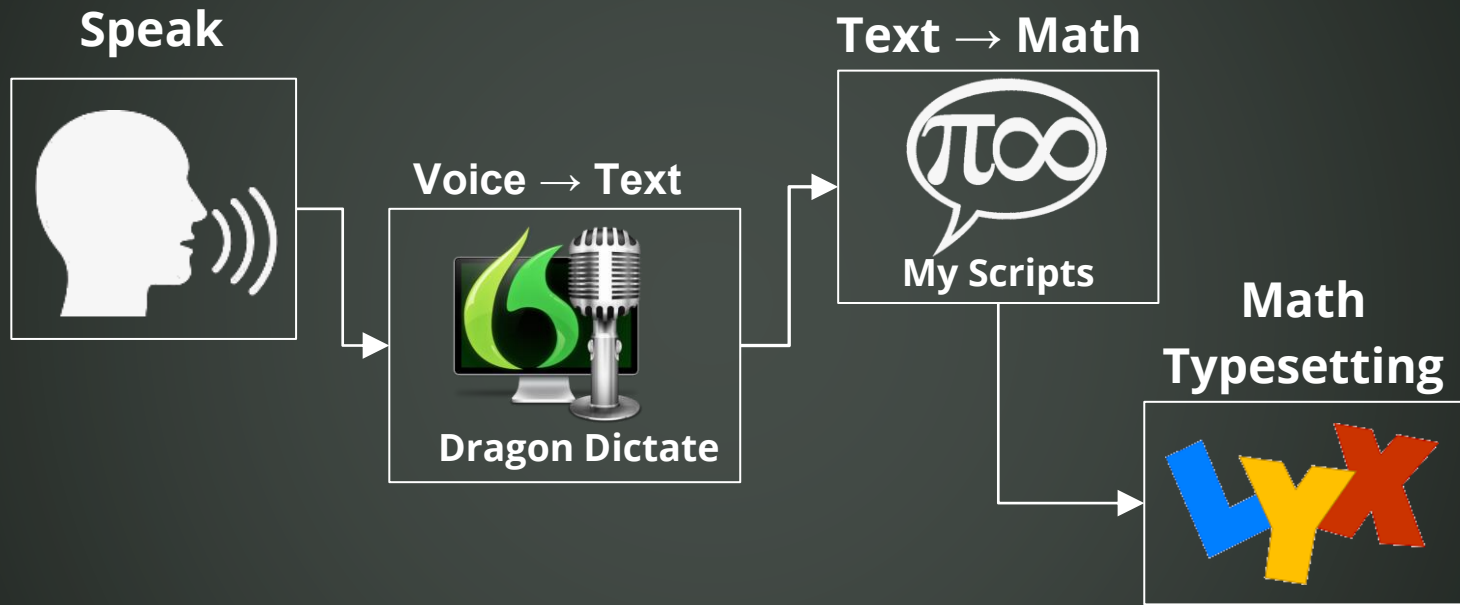


# DEMO

$$\operatorname{arccosh}(z) = \frac{1}{2} \ln \left( \frac{z+1}{z-1} \right)$$

$$\left[ \frac{\frac{n}{2} - F}{f} \right]$$

# My Beta



$\text{sech}(z) = \frac{1}{\cosh(z)}$

$(x, y)$   
 $(x_2, y_2)$

$[x_1, y_1, x_2, y_2]$

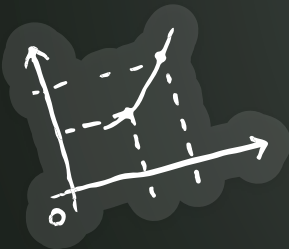
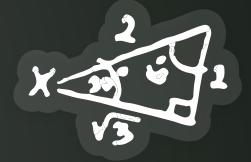
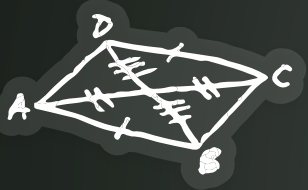




$$\operatorname{cosh}(z) = \frac{1}{2} \ln \left( \frac{z+1}{z-1} \right)$$

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# DEMO

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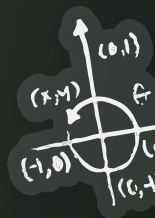

$$\sim(p \wedge q) \equiv \sim p \vee \sim q$$


$$\tanh(z) = -i \tan(iz)$$

$$s^2 = \frac{\sum (x_i - \bar{x})^2}{N}$$

# To Do List

$$\sinh(z) = \frac{e^z - e^{-z}}{2}$$



- 
- **Marketing:** Few people know of these tools
    - Disability offices
    - Instructors
    - Students with disabilities/parents
    - Instructors/professionals who sustain injuries
  - Find/develop open-source **voice recognition (VR) with OS scripting**
  - Develop open-source **text-to-math scripts** connecting VR to Lyx.


$$\sim(pnq) \equiv \sim p \vee \sim q$$

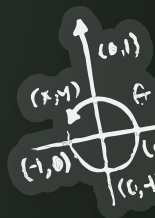
$$\tanh(z) = -i \tan(iz)$$

$$s^2 = \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}$$

# Dictating Resources

- Nuance's Dragon Dictate ([Dragon-Dictate.us](http://Dragon-Dictate.us)) (**proprietary code**)
- Talon ([TalonVoice.com](http://TalonVoice.com)) (**proprietary code**)
- Lyx ([Lyx.org](http://Lyx.org)) (**open-source**)
- Me ([MathTalker.org](http://MathTalker.org))

$$\operatorname{sech}(z) = \frac{1}{\cosh(z)}$$



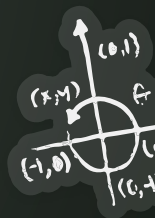
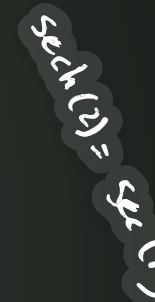
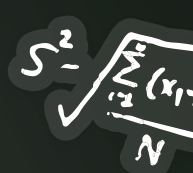
$$\sim(p \wedge q) \equiv \sim p \vee \sim q$$

$$\tanh(z) = -i \tan(iz)$$

# Other Resources

(not at all comprehensive, and all of them are **for-profit**)

- Glean ([Glean.co](https://glean.co))
  - Class note-taking tool
- Equatio ([Texthelp.com/products/equatio](https://texthelp.com/products/equatio))
  - Voice Recognition for simple math
  - Cross-platform, particularly Gdoc
  - Collaborative learning/teaching/assignments in "MathSpaces"
- LiquidText ([Liquidtext.net](https://liquidtext.net))
  - PDF note taking/research/mind mapping tool
- Typst ([Typst.app](https://typst.app))
  - Like overleaf, but collaborative like Gdocs
  - Real-time compiling
  - More intuitive scripting than Latex





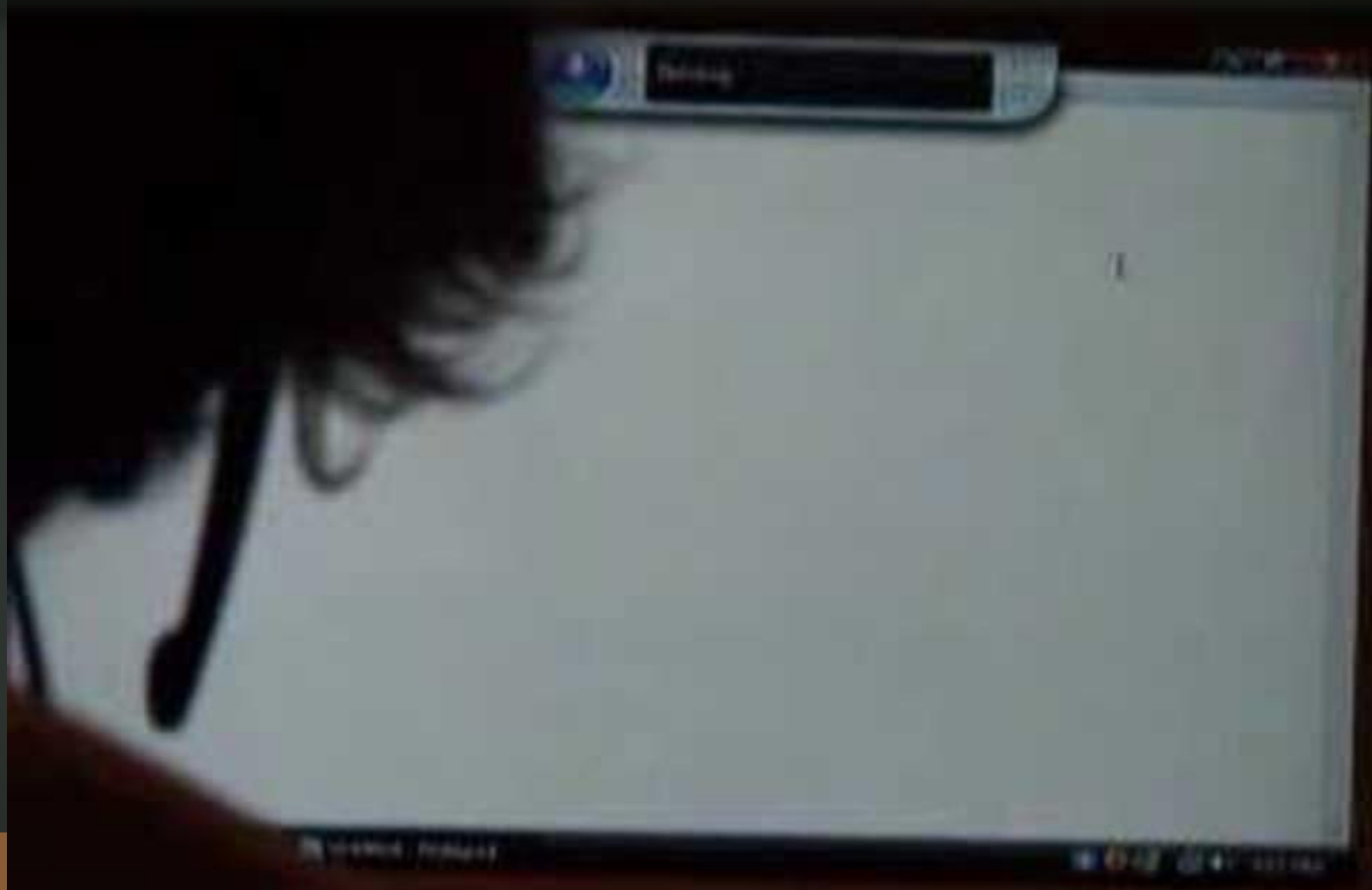
**Thank You!**

**Jodin Morey ([moreyj@lemoyne.edu](mailto:moreyj@lemoyne.edu))**

$$\frac{\sum_{i=1}^N (x_1 - x_2)}{N}$$

$$\frac{\frac{n}{2} - f}{f}$$

# Coding demo?



Credit to  
YouTube user  
Scrubadub:  
[LINK](#)



$$\sum_{i=1}^n \sqrt{\frac{x_i}{n}}$$

$$\text{such } (2) = \text{for } (1)$$

