



Visio 

# SenseMath

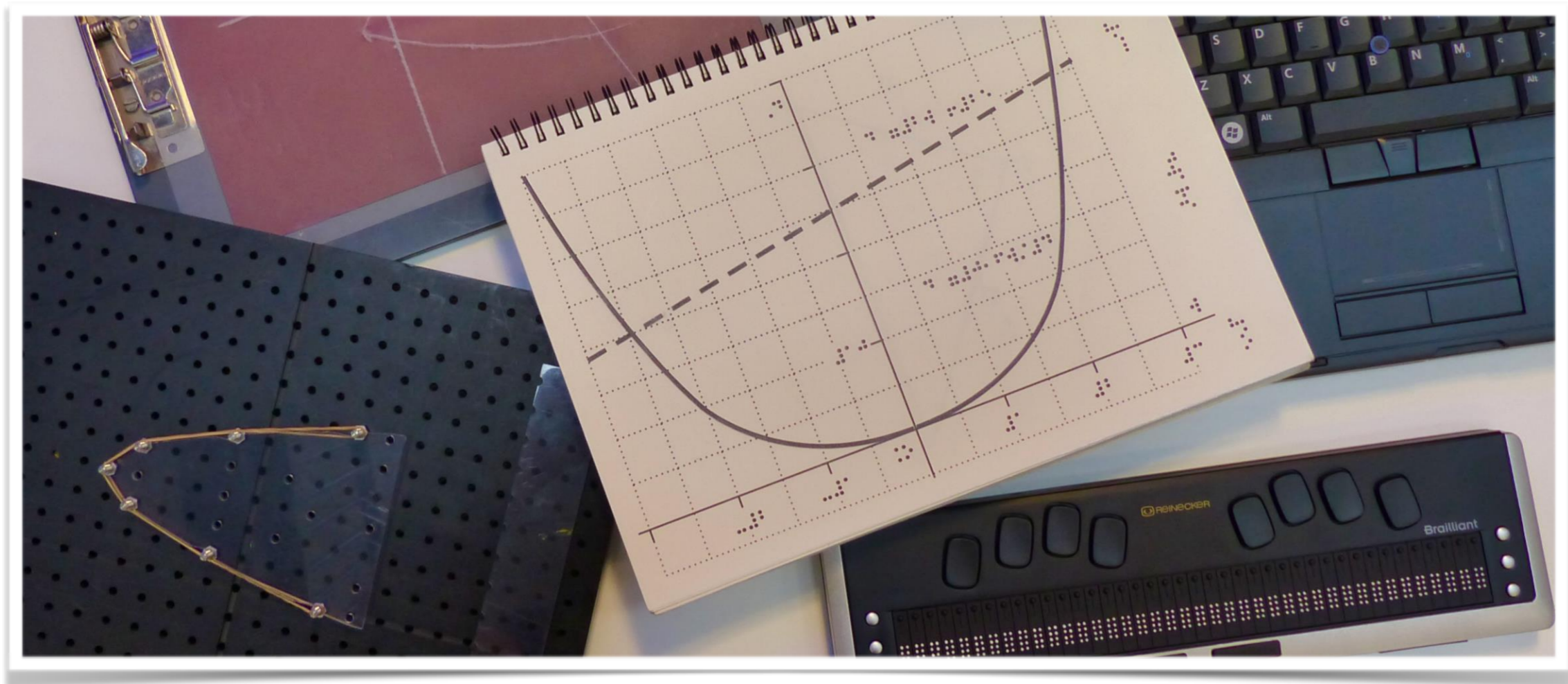
Wendy Voorn - Royal Dutch Visio

# Issue

Math; very important, but very challenging

Possibilities like every student

Making use of 'regular' innovative techniques



# Challenges

making use of senses - tactile and auditory?

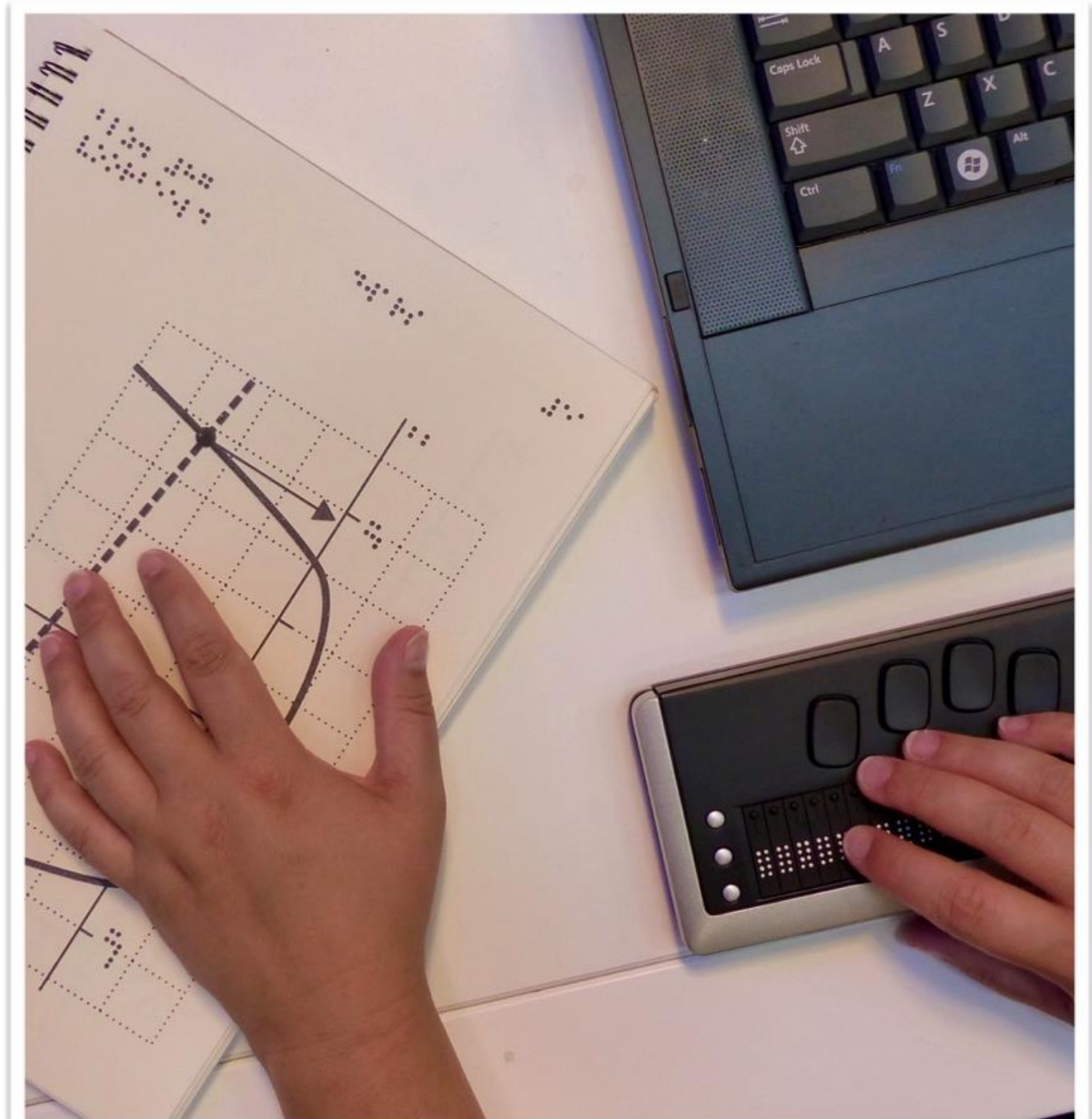
big challenge - focus on math graphs

a blind student is the user



# Goals

- independence
- quickly
- every graph
- no costs
- anytime anywhere



# Formula input

- linear formula input
- regular / native keyboard
- math is key

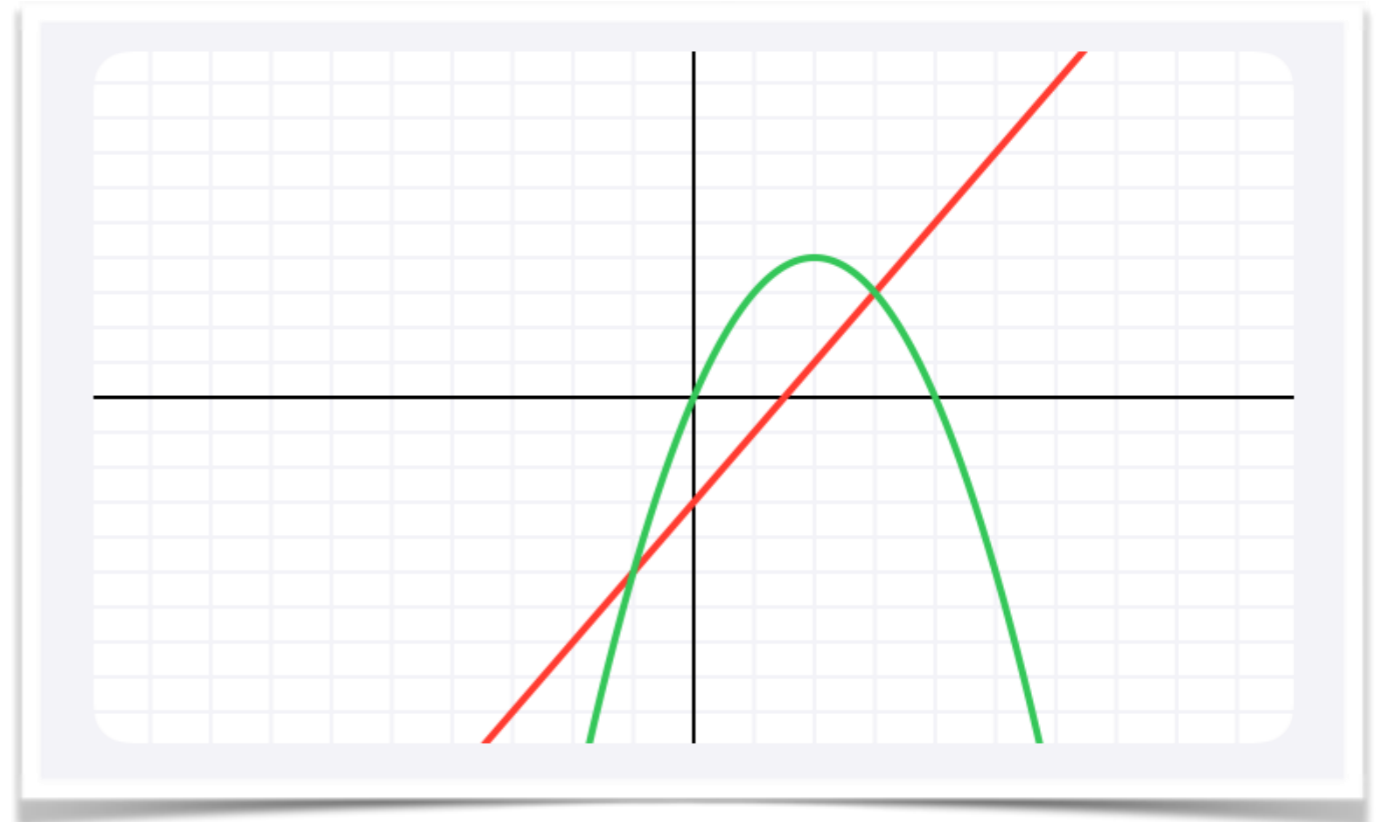


# video formula input



# Formula output

- speech [MathML]
- output in braille
- users preference



2 FUNCTIES

$$y = 2x - 3$$



$$y = 2x - 3$$

$$y = -(x - 2)^2 + 4$$



$$y = -(x - 2)^2 + 4$$

# video formula output



$f(x)$



# Sound of graph

## Auditory elements in graph

- graph(s) itself
- intersection points
- steps on x-axis
- under x-axis
- extrema

Speed

Rotor controls

The screenshot shows a settings menu with the following sections and options:

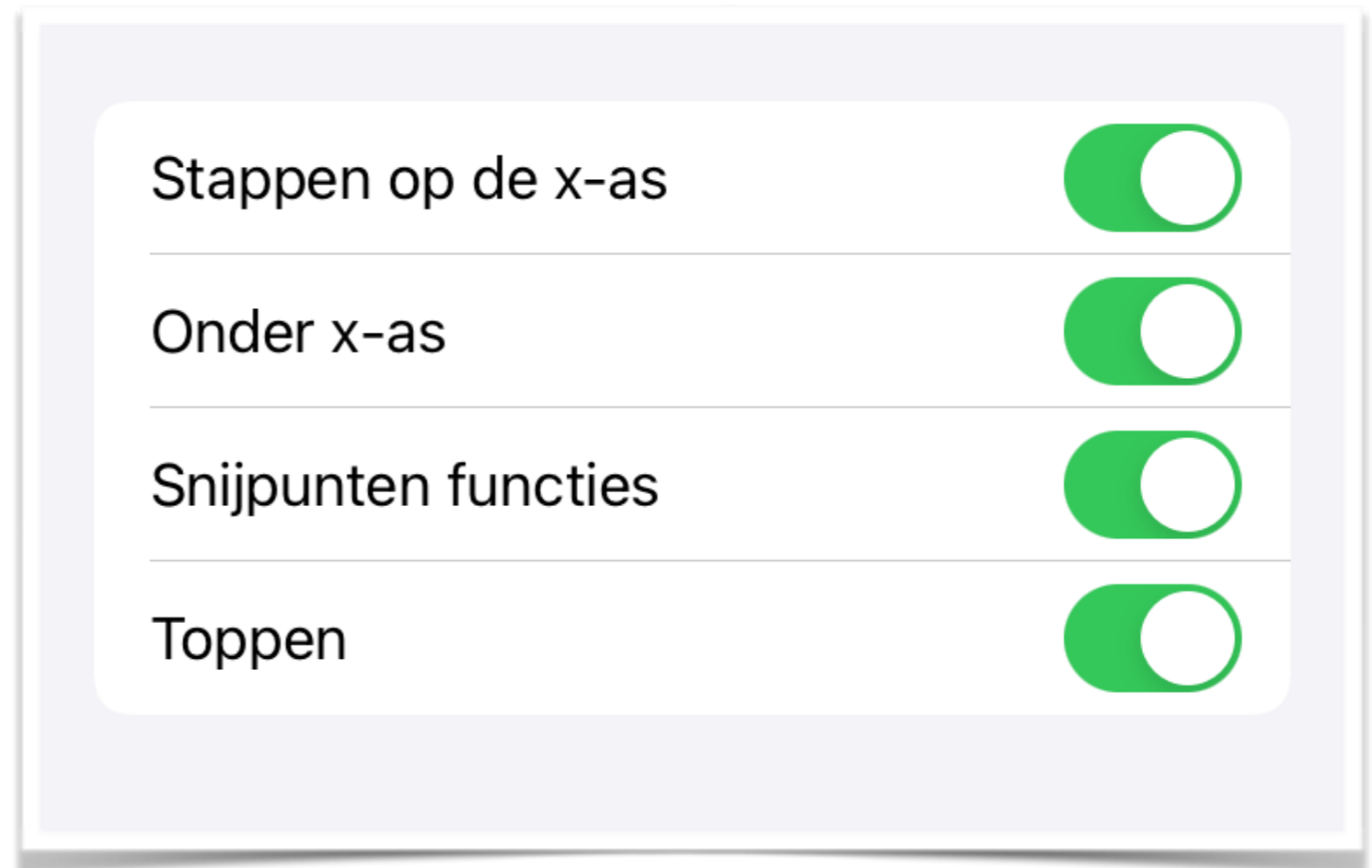
- ELEMENTEN**
  - Stappen op de x-as:
  - Onder x-as:
  - Snijpunten functies:
  - Toppen:
- FUNCTIE WEERGAVE**
  - Wiskundig | Lineair | **Beide**
- VOICEOVER ROTOR**
  - VoiceOver rotor favorieten >

# video sound of formula



# Usability and accessibility

- standards of iOS
- gestures and rotor
- minimal visual effects
- personal preferences



SenseMath is as soon as possible available in the AppleStore

SenseMath 2.0 - summer 2021

- library of math books (via CMS)
- zoom to fit
- choice of sounds
- bugs 1.0



# Contact

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