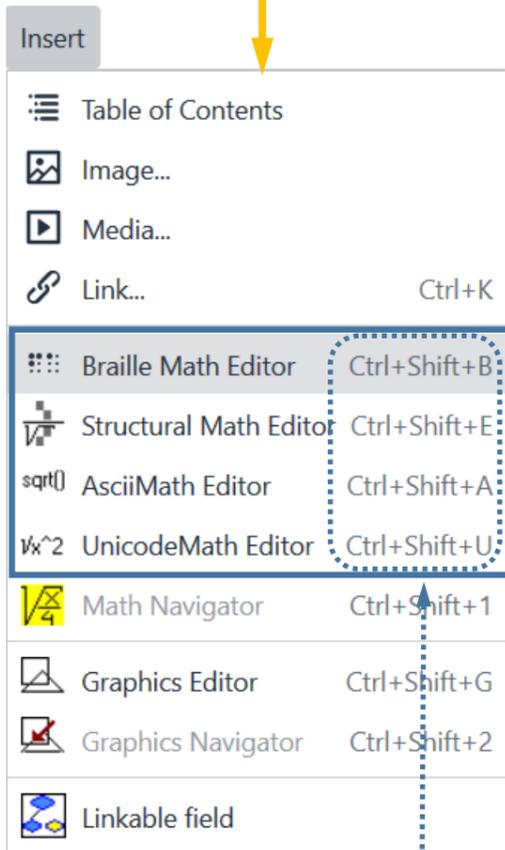EURO MATH — EDUCATION PLATFORM

The EuroMath web application includes 4 formula editors: **Braille Math Editor**, **Structural Math Editor**, **AsciiMath Editor** and **UnicodeMath Editor**. By using these you can write complex mathematical expressions. Choose the one which can fulfil your vision needs and best suit your devices (QWERTY keyboard, computer mouse, braille keyboard).

1. Run the editor
Position the cursor in the place of the document where you want to enter the formula, then go to the **Insert** menu and select your editor by pressing Enter key.

Insert

☰ Table of Contents		
🖼 Image...		
▶ Media...		
🔗 Link...	Ctrl+K	
⠿ Braille Math Editor	Ctrl+Shift+B	
Structural Math Editor	Ctrl+Shift+E	
sqrt() AsciiMath Editor	Ctrl+Shift+A	
⅟x^2 UnicodeMath Editor	Ctrl+Shift+U	
Math Navigator	Ctrl+Shift+1	
Graphics Editor	Ctrl+Shift+G	
Graphics Navigator	Ctrl+Shift+2	
Linkable field		

To do it faster, use the keyboard shortcut assigned to each editor.
Shortcuts work when the focus is in the document area and the screen reader edit mode is on.

2. Braille Math Editor
CTRL+SHIFT+B

In this editor you can write formulas in BNM or UEB braille mathematical notation, depending on the language of the application (**Settings-> Language**). UEB notation is active for the selected English language.

Formula bar- input field

`#h "- #e "7 #c`

Font: Ascii

Braille Math Editor

Font: Braille

Virtual QWERTY braille keyboard

Confirm

You can change the font in the formula bar.

Insert formula to the document.

Press **Esc** if you want to abandon your changes and exit without saving (works in any editor).

Set the keyboard you will use to write formulas (virtual QWERTY braille keyboard or physical braille keyboard: BraillePen, BrailleNote Touch).
Don't forget to set up a physical braille keyboard. If you are a BraillePen user you will need a file necessary for the device to work properly. Download it from here.

Virtual QWERTY braille keyboard
Physical braille keyboard

🎥 How to start working with EuroMath?
How a blind student uses the Braille Math Editor?

📖 Read more about Braille keyboards support in the EuroMath, p. 23

3. Structural Math Editor
CTRL+SHIFT+E

You can write formulas in it, just like in MS Word, using the characters available on the QWERTY keyboard as well as symbols and structure templates located on 3 tabs, which you fill with appropriate values after inserting into the formula bar. Build expressions top-down.

Formula bar- input field. Expression cannot end with an equal sign =

Insert formula ✕

$$\sqrt{2\sqrt{}} = \sqrt{} \cdot \sqrt{}$$

basic	additional 1	additional 2

$+ \; - \; \cdot \; : \; \% \; ‰ \; ° \; \pi \; \alpha \; \beta \; \triangle \; \angle$

$< \; \leq \; = \; \neq \; \geq \; > \; \approx$ √ root (ctrl + p)

Cancel   Clear   Insert

Fill the templates with the appropriate values.

Find the symbol/template you need by clicking on the available tabs.

Insert the symbol or template into the formula bar by clicking on it with the mouse or using the keyboard shortcut. When you move the mouse pointer over an element, its name and keyboard shortcut will appear as a hint in enlarged font.
Not all elements on the tabs have their shortcuts.

Insert formula to the document.

additional 1

$\cap \; \cup \; \subset \; \infty \; \in \; \notin \; \emptyset \; \sin() \; \cos() \; tg()$
$\gamma \; \Omega \; \Delta \; \mathbb{R} \; \mathbb{N} \; \mathbb{C} \; W \; NW \; \sqrt{} \; \parallel$

additional 2

$\pm \; \delta \; \epsilon \; \varphi \; \sigma \; \log() \; ctg() \; \lim_{x\to} \; (:) \; (:)$
$\neg \; \wedge \; \vee \; \Leftrightarrow \; \Rightarrow \; \log_{10}() \; ! \; \lim_{n\to\infty}() \; \langle:\rangle \; \langle:\rangle$

🎥 Writing formula using Structural Math Editor

📖 Read more about formula editing, p. 28

4. AsciiMath Editor

In this editor you can write formulas in linear AsciiMath notation using symbols available on the QWERTY keyboard. The editor window appears directly in the body of the document. As you write the formula, you have a graphical preview of your expression below, so you can easily correct its syntax.

EURO MATH EDUCATION PLATFORM | File | Slides | Edit | Insert | Format
1/1 | Paragraph | B
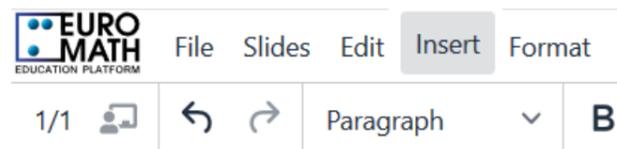
c) (x-1)/5=(-x+4)/(2.5)
$$\frac{x-1}{5} = \frac{-x+4}{2.5}$$

← Formula bar - input field

2. $5(x-1) = 5(-x+4)$

2. $5x - 2.5 = -5x + 20$

← Simultaneous graphic preview of the math expression

2. $5x + 5x = 20 + 2.5$

7. $5x = 22.5$

AsciiMath examples:

{(x+2y=7),(2x-y=1):}
$$\begin{cases} x + 2y = 7 \\ 2x - y = 1 \end{cases}$$
Equation system

E=mc^2
$$E = mc^2$$
Exponentiation

x in RR
$$x \in R$$
Set of real numbers

int_-1^1sqrt(1-x^2)dx=pi/2
$$\int_{-1}^{1} \sqrt{1-x^2}\,dx = \frac{\pi}{2}$$
Definite integral

lim_(x->+oo)=f(x)
$$\lim_{x \to +\infty} = f(x)$$
Limit of a function

sum_(i=1)^1i^3=((n(n+1))/2)^2
$$\sum_{i=1}^{1} i^3 = \left(\frac{n(n+1)}{2}\right)^2$$
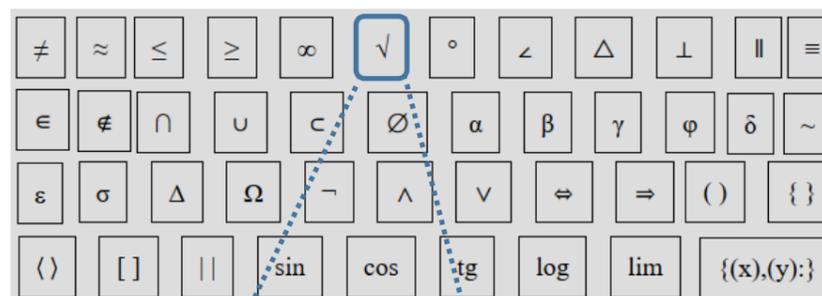Summation

NASK

5. UnicodeMath Editor

You can write formulas here in linear notation, which we called UnicodeMath. It is an extension of the AsciiMath notation by symbols not available on the QWERTY keyboard, such as the angle, triangle, root and others. They are located on the ribbon, from where they can be selected and inserted into the formula by clicking the mouse or using a finger and stylus on the touch screen.

[Symbol ribbon keyboard:]
≠ ≈ ≤ ≥ ∞ √ ° ∠ △ ⊥ ∥ ≡
∈ ∉ ∩ ∪ ⊂ Ø α β γ φ δ ~
ε σ Δ Ω ¬ ∧ ∨ ⇔ ⇒ () {}
⟨⟩ [ ] || sin cos tg log lim {(x),(y):}

√a * sqrt b=√(a*b)
$$\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$$

← Ribbon with the symbols

The UnicodeMath editor allows you to enter symbols in AsciiMath notation. The example above uses both the square root symbol from the ribbon and the text "sqrt" as in AsciiMath. In both cases, the graphic visualization of the expression is correct.

△=b^2-4ac
△=(-8)^2-4*(-2)*10=
=64+80=144
√△=√144=12
$$\triangle = b^2 - 4ac$$
$$\triangle = (-8)^2 - 4 \cdot (-2) \cdot 10 =$$
$$= 64 + 80 = 144$$
$$\sqrt{\triangle} = \sqrt{144} = 12$$

You can also write multi-line expression transformations. **SHIFT+Enter** moves the cursor to a new line.

Enter completes editing and inserts the expression into the document. You will achieve the same effect when you click anywhere in the document outside the editor.

How to use UnicodeMath Editor?
How to use AsciiMath Editor?

6. Math Navigator

This tool will allow you to conveniently familiarize yourself with the elements of a complex formula and correct the selected part with any editor, without having to load the entire expression. If you are a blind student, you can navigate and explore formula with the cursor arrows or touch gestures (a portable version of NVDA or an installed add-on is required).

Consider the function:
$$f(x) = \frac{16 - x^2}{4 + x}$$

Select formula. Properly selection is indicated by the visible frame around the formula and the semantic reading of its content by a screen reader.

whose domain is the set of all real numbers except -4.

Start the Math Navigator using the **Insert** menu option, keyboard shortcut or pop-up menu (**SHIFT+F10**) and then explore the formula with the arrow keys. Parts of the formula will be highlighted sequentially and read by a screen reader.

Math Navigator

① $f(x) = \frac{16-x^2}{4+x}$ ② $f(x) = \frac{16-x^2}{4+x}$ ③ $f(x) = \frac{16-x^2}{4+x}$

④ $f(x) = \frac{16-x^2}{4+x}$ ⑤ $f(x) = \frac{16-x^2}{4+x}$ ⑥ $f(x) = \frac{16-x^2}{4+x}$

Insert | Edit selection in AsciiMath | Edit selection in Unicode | Edit selection in Braille | Cancel

Insert the corrected formula into the document

Edit selected part of the formula. Press the appropriate button.

Ascii Editor
x^2
Insert to Math Navigator | Cancel
x^2

Braille Math Editor ×
Font: Braille

Using formula editors and formula navigator by the keyboard and gestures, p. 16

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