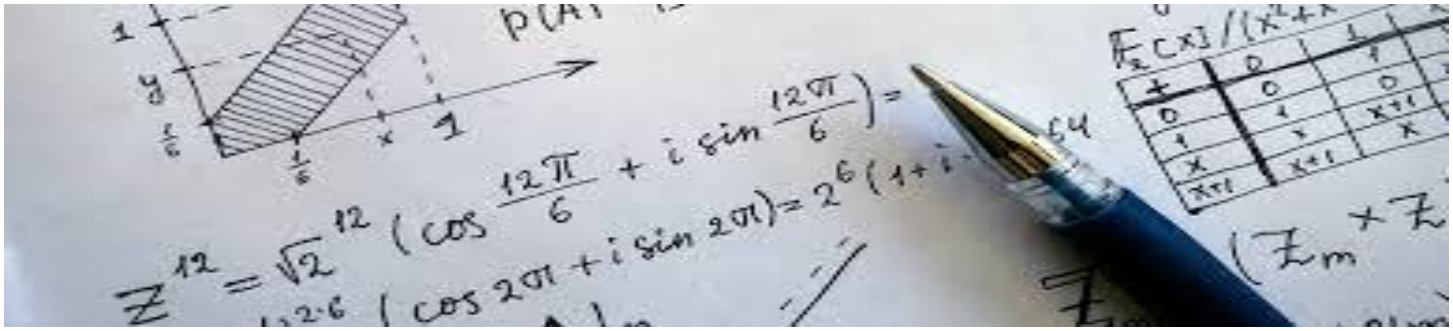
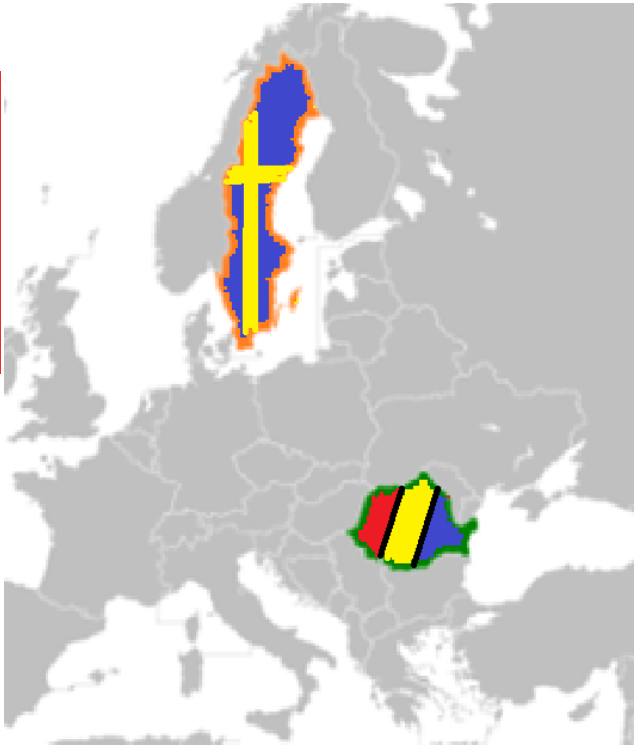


Experiencing Calculus via STACK and GeoGebra




Kiruna
Norwegian Sea
Luleå
Skellefteå
NORWAY
Wilhelmina
Umeå
Sundsvall
Gulf of Bothnia
Sveg
FINLAND
SWEDEN
Gävle
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Gotland
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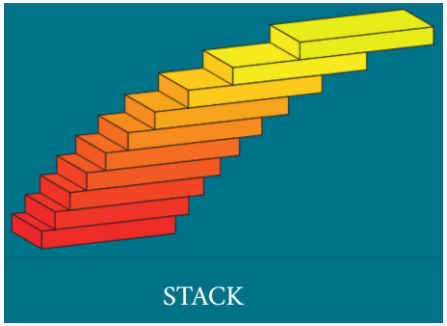
Malmö
LITHUANIA

Studying at Karlstad University

ULBS Presentation in English

STACK | The University of Edinburgh



What STACK does

STACK (the **S**ystem for **T**eaching and **A**ssessment using a **C**omputer algebra **K**ernel) is an online assessment package for mathematics. This open-source system helps you build sophisticated assessments for STEM which challenge your students and provides feedback to help them improve their performance and understanding.

- STACK demonstration site
- STACK questions include:
  - Full algebraic input with validation and feedback
  - Multi-choice questions
  - Line by line reasoning
  - Dimensional numerical quantities

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STACK is a ***computer-aided assessment system*** for mathematics, science and related disciplines, designed to ***enable students to answer questions with a mathematical expression***.

In various systems, due to the implementation difficulties, math questions often ***have to be multiple choice questions***. However, with the STACK question type, the students are offered more possibilities: they ***can use visual or other type of formative feedback when solving the task and enter directly math answers,*** not only choose among answers.

STACK questions can have several parts and each part can be ***assessed separately***.

STACK questions can also include ***randomly generated*** components, which makes it much easier to create a series of practical questions and also prevent students from collaborating during a test.

Student responses can be assessed on the basis of a series of tests, with ***feedback,*** and different grades returned to students based on test results.

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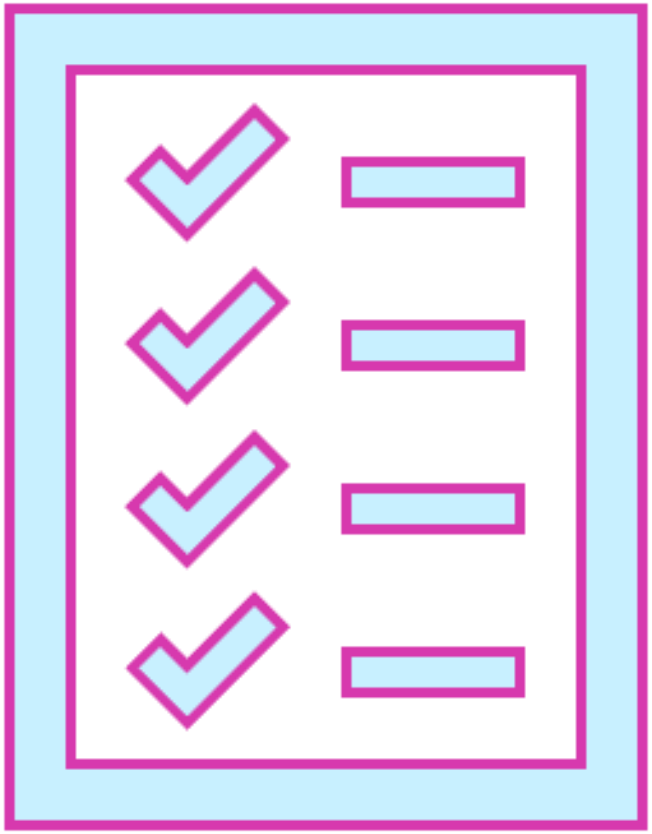
Workshop PORTO



Quiz-Part I *consists of 8 progressively structured questions, each designed to offer formative feedback for both correct, partially correct and incorrect responses.*

Quiz-Part II *also contains 8 questions, of which 6 are from Mathematics, and the last 2 are from Informatics. The Informatics questions follow the same design principles as the Mathematics ones, incorporating formative feedback for correct, partially correct, and incorrect answers.*

Quiz, part I

Example generating tasks

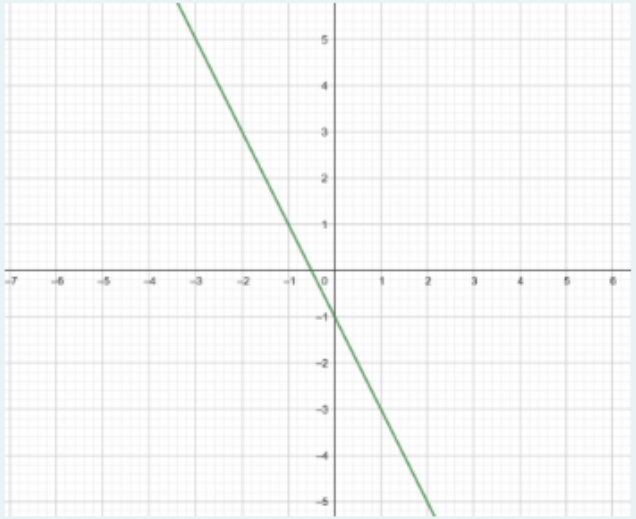
"Translation" tasks (from-graph-to-formula)

Tidy STACK

Let $(s_n) = \left\{ \frac{P_k(n)}{Q_i(n)}, n \in \mathbb{N} \right\}$ a sequence such that $P_k(n)$ and $Q_i(n)$ are two polinomyal of degrees $k \leq 3$ respectively. Give an example of a sequence s_n such that sequence is

a) divergent;

Write an equation for line in the graph below:



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Quiz, part II

Multiple choice questions

Let $f : \mathbb{R} \to (0, \infty)$, $f(x) = e^{-2x}$, $g : (0, \infty) \to (1, \infty)$, $g(x) = \frac{1}{e^{-2x}}$ and $h : (0, \infty) \to \mathbb{R}$, $h(x) = -\frac{1}{2} lnx$. Which of the following statement(s) is/are true?

a. g and h are inverses of each other.

b. f and h are inverses of each other.

c. f and g are inverses of each other.

d. None of f, g or h are inverses of each other.

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Guide for entering the answer

- for $\begin{bmatrix} 1 & 3 \\ 5 & 9 \end{bmatrix}$ should be entered as $matrix([1,3],[5,9])$
- enter $\alpha + \beta$ as $alpha + beta$
- $1 < x$ and $x < 5$, not $1 < x < 5$
- for list 1, 2, 3, 3 type [1, 2, 2, 3]
- for set type {1,2,3}
- $e^x \sin(bx)$ should be entered as $\exp(a * x) * \sin(b * x)$
- i or e is entered as $\%i$ respectively $\%e$
- x^2 is entered as $x\text{^}2$
- $\frac{3}{5x}$ is entered as $3/(5 * x)$

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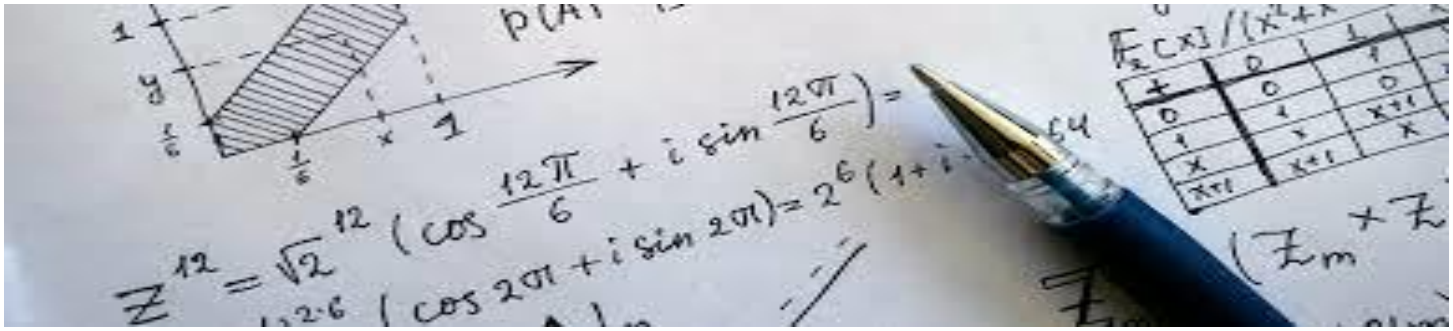

Please use the given link and password for each group.

Let's start the test!

Good luck! ☺