LEARN MATH WITH US!

Innovating methods for teaching and learning: constructing and implementing examples in a computer assessment system (STACK)

INTEGRATED SYSTEM FOR INTERACTIVE KNOWLEDGE TRANSFER

FORMATIVE FEEDBACK CONSTRUCTION, DESIGN AND IMPLEMENTATION

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- ❖ The project started by putting together the experience accumulated by several collectives of university teaching staff, regarding modern learning techniques.
- ❖ The next step was the analysis of the problems encountered by students in the accumulation of knowledge
- ❖ The third step was to understand how automatic techniques can be combined with those in which the direct teacher-student relationship is used
- ❖ The fourth step represented the choice of the platform in which to implement the structure designed through the collaboration of the teachers' collectives
- ❖ The fifth step consists of continuous meetings, in which problems, implementation solutions and adaptation methods are presented according to the particularities of the chosen platform

Pythagoras

How we implemented a DataRoom to create the physical and software platform

- ❖ A space has been created for the installation of the DataRoom
- ❖ Electrical and internet connections with backup were ensured
- ❖ A specialized application server was purchased
- ❖ A domain was purchased for the current and future applications
- ❖ A server virtualization system has been configured
- ❖ The specialized STACK environment has been installed
- ❖ The suites of specialized packages for advanced e-learning services have been installed
- ❖ System user hierarchies have been created
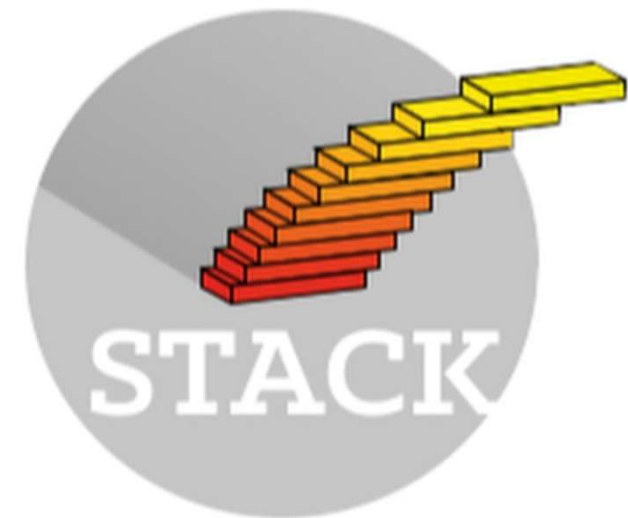- ❖ System maintenance and updates are continuously ensured

Pythagoras

How we work on DataRoom side

❖ OS configuration for application server.

❖ Configuration of virtualization system for the server.

❖ Configuring virtual servers.

❖ Configuring the virtual machine for the moodle environment.

❖ Configuration of packages for the implemented services (including stack/moodle environment).

❖ Maintenance of virtual machines, physical server, website.

❖ The study on the implementation models of queries with formative feedback in the stack environment. Maintenance of virtual machines, physical server, website.

Moodle STACK is a sophisticated assessment system designed for mathematics, scientific, and related disciplines, integrated into the Moodle online learning platform. This complex solution provides an interactive and flexible environment for testing and evaluating students knowledge in mathematics and sciences, enabling responses that involve mathematical expressions, thereby replacing multiple-choice questions with the ability to input mathematical solutions directly.

To better understand Moodle STACK, it is important to first analyse its essential features and how they contribute to improving the learning and evaluation process in the online environment.

STACK offers the possibility to introduce at the beginning of the evaluation a theoretical part that will give the student a short recapitulation that will help in obtaining a maximum score.

Definition: A sequence of real numbers is a function $f : \mathbb{N} \to \mathbb{R}$, $f(n) = a_n$ or $f : \mathbb{N} \setminus A \to \mathbb{R}$, where $A \subset \mathbb{N}$ finite, $f(n) = a_n$.

Notation: (a_n) is the sequence defined by the function f.

Definition: A sequence of real numbers (a_n) is increasing (decreasing) if $a_n \leq a_{n+1}$ $(a_n \geq a_{n+1})$, $\forall n \geq 0$. If the above inequalities are strictly, then the sequence is called strictly increasing (strictly decreasing).

To study the monotony of a sequence (a_n), the sign of the difference $\Delta a_n = a_{n+1} - a_n$ can be establish or to compare the ratio $\frac{a_{n+1}}{a_n}$ with 1, when $a_n > 0$, $\forall n \geq 0$.

After completing the theoretical parts, the student can complete the questions from the evaluation test.
There are several types of STACK questions that can be assigned to students to test the level of knowledge related to a subject.

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.

Let $f : (0, \infty) \to (0, 1)$,
$f(x) = e^{-2x}$, $g : (0, \infty) \to (1, \infty)$, $g(x) = \frac{1}{e^{-2x}}$ and $h : (0, \infty) \to \mathbb{R}$, $h(x) = -\frac{1}{2}lnx$
. Determine the following composite functions:
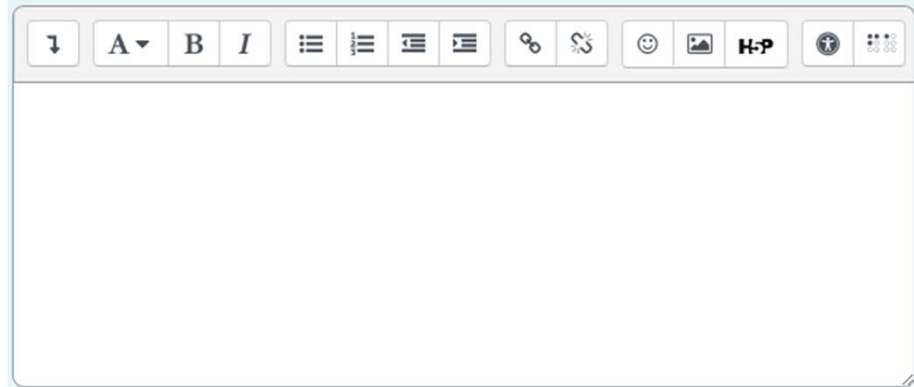
a) $(f \circ g)(x) = f(g(x)) = $

b) $(f \circ h)(x) = f(h(x)) = $

c) $(h \circ f)(x) = h(f(x)) = $

Investigate, by using GeoGebra, how the graph of the trigonometric function $f(x) = A\ sin(B(x + C)) + D$, depends on the values of the parameters A, B, C and D.

a) Describe in what way the various parameters alter the graph.

| ⤵ | A ▾ | B | I | ☰ | ☰ | ☰ | ☰ | ⚭ | ⚭ | ☺ | ⌴ | H5P | ⊕ | ⠿ |

Compute the solutions for the equation: $3 \cdot y^2 - y - 1 = 0$

[y = ,y =]

One of the defining characteristics of Moodle STACK is its ability to allow students to input mathematical answers directly within the Moodle platform. This is crucial for accurately assessing knowledge and skills in mathematics and sciences, as some questions require explanations and complex solutions that cannot be reduced to simple multiple-choice selections.

Let the function $f(x) = \ln(2x + 5)$.

i) Enter the expression for f^{-1}

$f^{-1}(x) =$ `%e^x/2-5/2`

Your last answer was interpreted as follows:

$$\frac{e^x}{2} - \frac{5}{2}$$

The variables found in your answer were: $[x]$

Implementation of questions. Example

➢ Question variables (optional) – In the following example, the variables ta1, ta2, ta3 represent the correct answers provided by the teacher, against which the student's responses will be checked.

Question variables
```
ta1:{-2*n^3+5*n+1}/{n^2-4};
ta2:{-2*n^2+5*n+1}/{n^3-27};
ta3:{6*n^3+5*n+1}/{10*n^3-1};
```

Question text ⟶

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; [[input:ans1]] [[validation:ans1]][[feedback:prt1]]

b) convergent to zero; [[input:ans2]] [[validation:ans2]][[feedback:prt2]]

c) convergent to $\frac{3}{5}$. [[input:ans3]] [[validation:ans3]][[feedback:prt3]]

Implementation of questions. Example

➤ Input answers: ans1, ans2, ans3, etc

⌄ Input: ans1

Input type	❓	Algebraic input ⬍
Model answer	❓	ta1
Input box size	❓	15

> **Input: ans1**

> **Input: ans2**

> **Input: ans3**

> **Potential response tree: prt1**

> **Potential response tree: prt2**

> **Potential response tree: prt3**
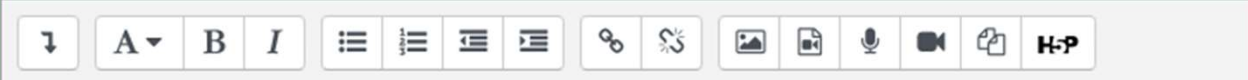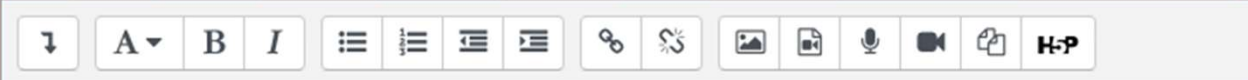
➤ Potential response tree for each answer

Node 1	❓	Answer test	AlgEquiv ⬍	SAns	ans1	TAns	ta1
		Test options		Quiet	No ⬍		

| Node 1 when true | ❓ | Mod | = ⬍ | Score | 1 | Penalty | | Next | [stop] ⬍ | Answer note | prt1-1-T |

Node 1 true feedback ❓

⬎ A▾ B I ≔ ≔ ⊒ ⊒ ⸜ ⸝ 🖼 🖼 🎤 🎥 ⧉ H₅P

| Node 1 when false | ❓ | Mod | = ⬍ | Score | 0 | Penalty | | Next | [stop] ⬍ | Answer note | prt1-1-F |

Node 1 false feedback ❓

⬎ A▾ B I ≔ ≔ ⊒ ⊒ ⸜ ⸝ 🖼 🖼 🎤 🎥 ⧉ H₅P

Consider the sequence $\((s\_n),s\_n=\frac{a\_kn^k+a\_{k-1}n^{k-1}+\ldots+a\_1n+a\_0}{b\_i n^i+b\_{i-1}n^{i-}$

Implementation of questions. Example

➢Potential response tree for each answer - this is where formative feedback comes:

❖ for whatever the student's answer is, we can give him feedback, either for the correct answer, partially correct or for the wrong answer

❖ if the student answered correctly, we can send him a feedback with the solution proposed by the teacher, and in case of a wrong answer, he will receive the correct answer and the related solution.

Another essential aspect of Moodle STACK is the ability to provide personalized and detailed feedback to students.

Feedback can be tailored to each student's results and can be used to highlight both their strengths and weaknesses. This approach encourages active student engagement in the learning process and helps them better understand the concepts and issues they are facing.

For example, we have the following equation:

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;

b) convergent to zero;

c) convergent to $\frac{3}{5}$.

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; {-(2*n^3)+5*n+1}/{n^2-4}

Your last answer was interpreted as follows:

$$\frac{\left\{ -2 \cdot n^3 + 5 \cdot n + 1 \right\}}{\left\{ n^2 - 4 \right\}}$$

The variables found in your answer were: $[n]$

✔ **Correct answer, well done.**

b) convergent to zero; {-(2*n^2)+5*n+1}/{n^3-27}

Your last answer was interpreted as follows:

$$\frac{\left\{ -2 \cdot n^2 + 5 \cdot n + 1 \right\}}{\left\{ n^3 - 27 \right\}}$$

The variables found in your answer were: $[n]$

✔ **Correct answer, well done.**

c) convergent to $\frac{3}{5}$. {6*n^3+1}/{10*n^3-1}

Your last answer was interpreted as follows:

$$\frac{\left\{ 6 \cdot n^3 + 1 \right\}}{\left\{ 10 \cdot n^3 - 1 \right\}}$$

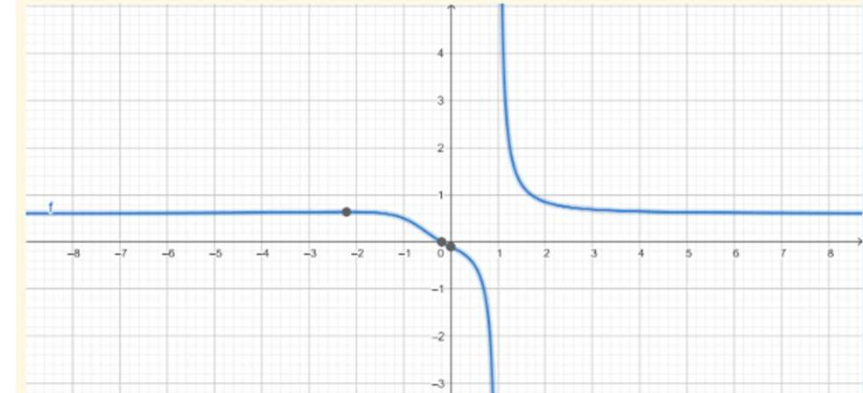The variables found in your answer were: $[n]$

✘ **Incorrect answer.**

Consider the sequence (s_n), $s_n = \frac{a_k n^k + a_{k-1} n^{k-1} + \ldots + a_1 n + a_0}{b_i n^i + b_{i-1} n^{i-1} + \ldots + b_i n + b_0}$.

(s_n) is convergent to $\frac{3}{5}$ if $k = i$ and $\frac{a_k}{b_i} = \frac{3}{5}$

For example:

(s_n), $s_n = \frac{6n^3 + 5n + 1}{10n^3 - 1}$, $n \in \mathbb{N}$ is convergent to $\frac{3}{5}$, $\lim_{n \to \infty} s_n = \frac{3}{5}$

Using GeoGebra, we can consider the function $f(x) = \frac{6x^3 + 5x + 1}{1 - x^3 = 10}, x \in \mathbb{R} \backslash \{1\}$

Another important feature of Moodle STACK is the ability to create questions with multiple parts, each part being evaluated separately. This allows for a more detailed assessment of students' competencies and provides a more comprehensive picture of their understanding of the subject.

Let A=[-2,-1)∪ℕ, $B = (-10, 1] \cup [3,4]$. Specify:

1. min A = -2

Your last answer was interpreted as follows:

$$-2$$

✔ **Correct answer, well done.**

2. inf B = -10

Your last answer was interpreted as follows:

$$-10$$

✔ **Correct answer, well done.**

3. max B = 3

Your last answer was interpreted as follows:

$$3$$

✖ **Incorrect answer.**

Pythagoras

Additionally, Moodle STACK offers advanced options for generating random components within questions. This is useful for creating a variety of practical questions and for preventing collaboration among students during tests. Randomly generated components ensure that each student receives a unique set of questions, thereby reducing the possibility of copying or cheating.

The coefficients of the equation are randomly generated in an interval set by the teacher for each individual student, or at each viewing of the question.

Compute the solutions for the equation:

$$2 \cdot x^2 + 6 \cdot x - 4 = 0$$

[x = -((sqrt(17)+3)/2),x =(sqrt(17)-3)/2]

Your last answer was interpreted as follows:

$$\left[x = -\frac{\sqrt{17} + 3}{2}, x = \frac{\sqrt{17} - 3}{2} \right]$$

The variables found in your answer were: $[x]$

Question variables

```
z: apply("+", [ ev(rand_with_prohib(-5, 5, [0])*x^2), ev(rand_with_prohib(-5, 10, [0])*x),
ev(rand_with_prohib(-5, 5, [0]))]);

roots: solve(z = 0, x);
```
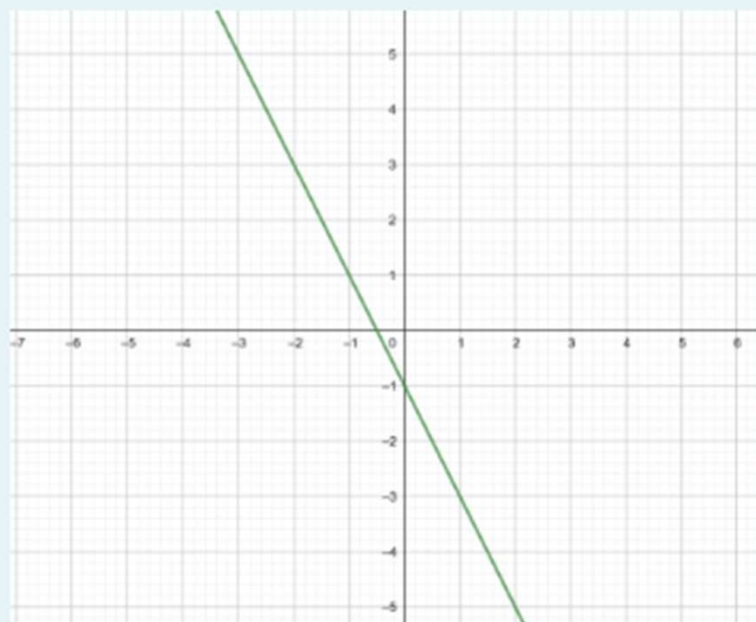
There are questions where the answer can be written in several forms. At the time of implementation, the teacher must provide all forms of correct answers. For example, the following variables constitute all forms of correct answer:
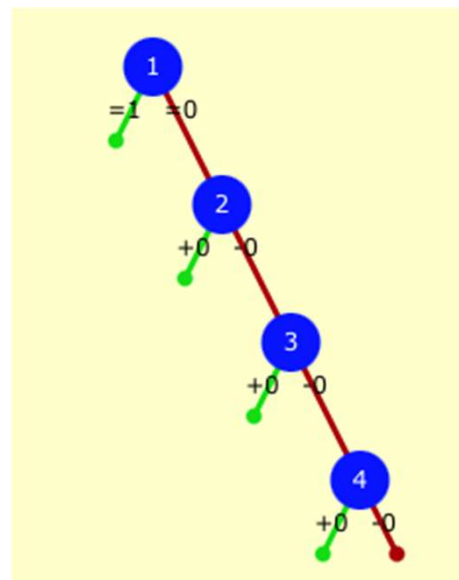
Question variables

ta1: y=-2*x-1

ta2: y=-1-2*x

ta3: -2*x-y-1=0

ta4: 2*x+y+1=0

The question is:

Write an equation for line in the graph below:

Since the question has several forms of correct answer, the tree related to the answers must be implemented

Implementing the tree related to the correct answers:

Students input equations directly into Moodle and can see a preview before they submit, and can receive feedback for each individual answer to the question.

Pythagoras

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;

-(2*n^3)+5*n+1

Your last answer was interpreted as follows:

$$-2 \cdot n^3 + 5 \cdot n + 1$$

The variables found in your answer were: $[n]$

b) convergent to zero;

{-(2*n^2)+5*n+1}/{n^3-27}

Your last answer was interpreted as follows:

$$\frac{\{-2 \cdot n^2 + 5 \cdot n + 1\}}{\{n^3 - 27\}}$$

The variables found in your answer were: $[n]$

c) convergent to $\frac{3}{5}$.

{6*n^3+5*n+1}/{10*n^3-1}

Your last answer was interpreted as follows:

$$\frac{\{6 \cdot n^3 + 5 \cdot n + 1\}}{\{10 \cdot n^3 - 1\}}$$

The variables found in your answer were: $[n]$

Check

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;

-(2*n^3)+5*n+1

Your last answer was interpreted as follows:

$$-2 \cdot n^3 + 5 \cdot n + 1$$

The variables found in your answer were: $[n]$

✖ Incorrect answer.

Consider the sequence (s_n), $s_n = \frac{a_k n^k + a_{k-1} n^{k-1} + \dots + a_1 n + a_0}{b_i n^i + b_{i-1} n^{i-1} + \dots + b_1 n + b_0}$.

(s_n) is divergent if $k > i$

For example:

(s_n), $s_n = \frac{-2n^3 + 5n + 1}{n^2 - 4}$, $n \in \mathbb{N}$ is divergent, $\lim_{n \to \infty} s_n = -\infty$

Using GeoGebra, we can consider the function $f(x) = \frac{-2x^3 + 5x + 1}{x^2 - 4}$, $x \in \mathbb{R} \backslash \{-2, 2\}$

b) convergent to zero;

{-(2*n^2)+5*n+1}/{n^3-27}

Your last answer was interpreted as follows:

$$\frac{\{-2 \cdot n^2 + 5 \cdot n + 1\}}{\{n^3 - 27\}}$$

The variables found in your answer were: $[n]$

✔ Correct answer, well done.

In some equations or algebra problems, such as the previous example, to analyse the student's answer (ans1) in the context of an equation with many possible answers, it is important to check the relationship between the numerator and the denominator, especially in terms of powers the variables involved. For example, in differential equations or certain optimization problems, the form of the answer may require the numerator to be a higher power of a variable compared to the denominator.

The code in the image extracts the numerator and denominator of the student answer and compares the maximum power of a variable n between them. This ensures that the answer obeys some relationship between the numerator and the denominator, relevant to the correct form of solutions to the equation with many answers.

✓ Potential response tree: prt1

Question value   1

Auto-simplify   ❓   Yes ⇕

PRT feedback style   ❓   Standard ⇕

Feedback variables   ❓   theirnum: num(ans1);
theirdenom: denom(ans1);
hipow(theirnum, n) > hipow(theirdenom, n)

Pythagoras

Node 1 ❓ Answer test [Num-GT ⇕] SAns [hipow(theirnum, n)]

TAns [hipow(theirdenom, n] Test options [ ] Quiet [No ⇕]

Node 1 when true ❓ Mod [= ⇕] Score [1] Penalty [ ] Next [[stop] ⇕]

Answer note [prt1-1-T]

Node 1 true feedback ❓

| ↴ | A▾ | **B** | *I* | ☰ | ☷ | ☲ | ☲ | | 🔗 | ✂ |

| ☺ | 🖼 | 🖼 | 🎤 | 🎥 | 🗂 | H5P | | ♿ | ⠿ |

Let's analyze if the sequence $s_n=\frac{-2n^3+5n+1}{n^2-4}$ is divergent. Let's look at the behaviour of this sequence a

Consider the polynomials:

Node 1 when false ❓ Mod [= ⇕] Score [0] Penalty [ ] Next [[stop] ⇕]

Answer note [prt1-1-F]

Node 1 false feedback ❓

| ↴ | A▾ | **B** | *I* | ☰ | ☷ | ☲ | ☲ | | 🔗 | ✂ |

| ☺ | 🖼 | 🖼 | 🎤 | 🎥 | 🗂 | H5P | | ♿ | ⠿ |

{@theirnum@}

Consider the sequence $(s_n), s_n=\frac{a_kn^k+a_{k-1}n^{k-1}+\ldots+a_1n+a_0}{b_in^i+b_{i-1}n^{i-1}+\ldots+b_in+b_0}$.

(s_n) is divergent if $k>i$

For example:

Types of equations in STACK
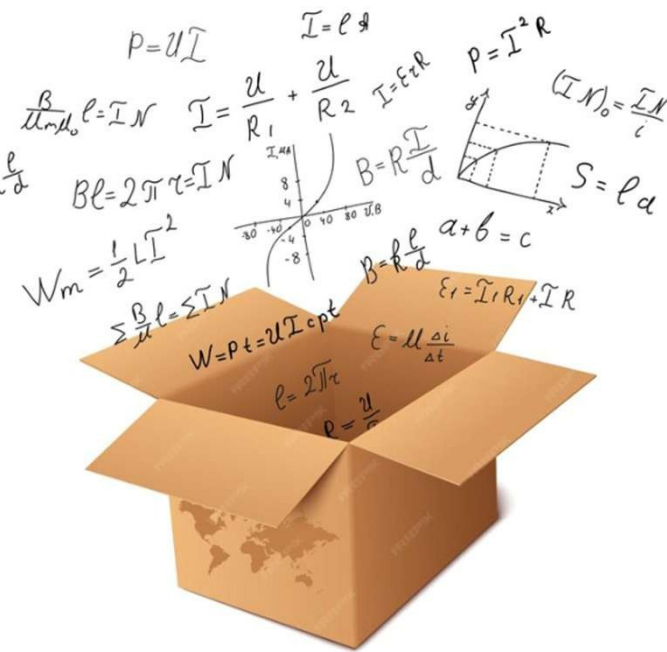
- ➤ *Multiple choice* – allows the selection of a singular o multiple responses from a pre-defined list
- ➤ *True/False* – a simple form of multiple choice question with just the two choices "True" and "Fals"
- ➤ *Matching* – the answer to each of a number of subquestion must be selected from a list of possibilities
- ➤ *Essay* – allows a response of a file upload and/or online text. This must then be graded manually
- ➤ *Drag and drop into text* – STACK provides mathematical questions for the Moodle quiz. These use a computer algebra system to establish the mathematical properties of the student's responses.
- ➤ *Select missing words* – missing words in the question text are filled in using drop-down menus
- ➤ *STACK* - STACK provides mathematical questions for the Moodle quiz. These use a computer algebra system to establish the mathematical properties of the student's responses.

This type of question allows students to choose as an answer one or more of the items and has the possibility to **access GeoGebra** to calculate the correct answer. For this type of question, for each student the items can be generated randomly, so that the items a, b, c, d are always in a different order.

In this example, the correct answer consists of two subpoints, so if the student has selected only one correct answer, they will receive half of the question's score.

Give an example of a sequence:

$(s_n) = \frac{an+b}{cn+d}$, $n \in \mathbb{N}$, where $a, b, c, d \in \mathbb{R}$ such that the sequence is:

a) increasing and convergent to 3;

b) decreasing and convergent to 3.

Use GeoGebra to check your sequences before you answer.

https://www.geogebra.org/calculator

Select the correct answer:

☐ a. sequence (s_n) is decreasing to 3 if $a = 3c, ad \leq bc$

☑ b. sequence (s_n) is increasing to 3 if $a = 3c, ad \geq bc, \frac{d}{c} \geq 0$ ✔

☐ c. sequence (s_n) is decreasing to 3 if $a = 3c, ad \leq bc, \frac{d}{c} \geq 0$

☑ d. sequence (s_n) is increasing to 3 if $a = 3c, ad \geq bc$ ✘

Pythagoras

If the question has more than one answer, the score must be divided according to how many correct items it has, so that if the student chooses only part of the correct answer, feedback for the partial answer will be sent to him.

Answers

Choice 1

sequence ($\(s\_n\)$) is increasing to $\(3\)$ if $\(a=3c, ad\geq bc\)$

Grade   None

Feedback

Choice 2

sequence ($\(s\_n\)$) is decreasing to $\(3\)$ if $\(a=3c, ad\leq bc\)$

Grade   None

Feedback

Choice 3

sequence ($\(s\_n\)$) is increasing to $\(3\)$ if $\(a=3c, ad\geq bc\)$, $\(\frac{d}{c}\geq 0\)$

Grade   50%

Feedback

Choice 4

sequence ($\(s\_n\)$) is decreasing to $\(3\)$ if $\(a=3c, ad\leq bc\)$, $\(\frac{d}{c}\geq 0\)$

Grade   50%

Feedback

For this question, depending on the student's answer, we implemented formative feedback for:

- correct answer

- partially correct answer

- incorrect answer

Combined feedback

For any correct response

Your answer is correct.

Consider the sequence $(s_n), s_n=\frac{an+b}{cn+d}$.

(s_n) is increasing if $(ad\geq bc, \frac{d}{c} \geq 0)$

For any partially correct response

Your answer is partially correct.
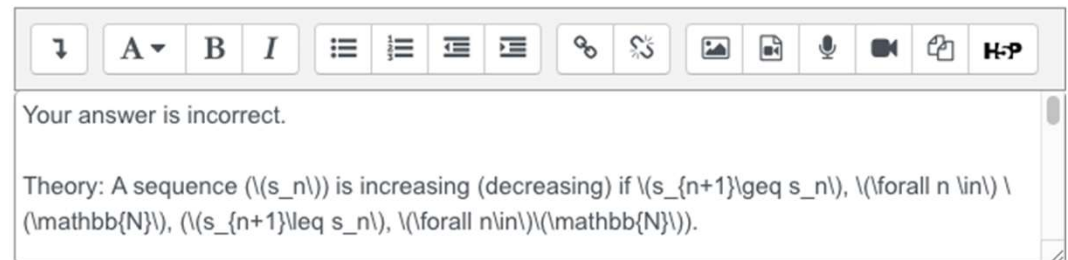
Theory: A sequence (s_n) is increasing (decreasing) if $(s_{n+1}\geq s_n)$, $(\forall n \in)$ $(\mathbb{N})$, $((s_{n+1}\leq s_n)$, $(\forall n\in)(\mathbb{N}))$.

Options   ☑ Show the number of correct responses once the question has finished

For any incorrect response

Your answer is incorrect.

Theory: A sequence (s_n) is increasing (decreasing) if $(s_{n+1}\geq s_n)$, $(\forall n \in)$ $(\mathbb{N})$, $((s_{n+1}\leq s_n)$, $(\forall n\in)(\mathbb{N}))$.

Pythagoras

Your answer is partially correct.

Theory: A sequence (s_n) is increasing (decreasing) if $s_{n+1} \geq s_n, \forall n \in \mathbb{N}, (s_{n+1} \leq s_n, \forall n \in \mathbb{N})$.
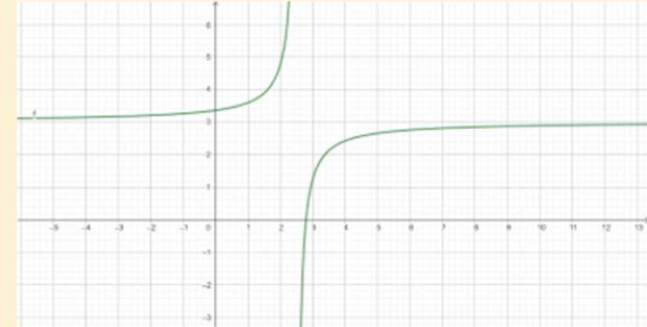
$\lim_{n \to \infty} s_n = \lim_{n \to \infty} \frac{a + \frac{b}{n}}{c + \frac{d}{n}} = \frac{a}{c} = 3, a = 3c, c \neq 0$

Approach: $s_{n+1} - s_n = \frac{ad - bc}{(cn + c + d)(cn + d)} = \frac{c(3d - b)}{c^2(n + 1 + \frac{d}{c})(n + \frac{d}{c})}$

We consider the function $f : \mathbb{R} \setminus \left\{-\frac{d}{c}\right\} \to \mathbb{R}, f(x) = \frac{ax + b}{cx + d}$ for study of monotony; $f'(x) = \frac{ad - bc}{(cx + d)^2}$.

For example $(s_n), s_n = \frac{24n - 67}{8n - 20}, n \in \mathbb{N}$ we have $ad - bc \geq 0$, but it is not increasing because $s_3 - s_2 < 0, s_3 - s_1 < 0, s_{n+1} - s_n > 0, \forall n \in \mathbb{N} \setminus 2$.

Using GeoGebra, we can represent the graphic of function $f(x) = \frac{24x - 67}{8x - 20}, x \in \mathbb{R} \setminus \left\{\frac{5}{2}\right\}$ and it si observed that $x = \frac{5}{2}$ is the vertical asymptote.
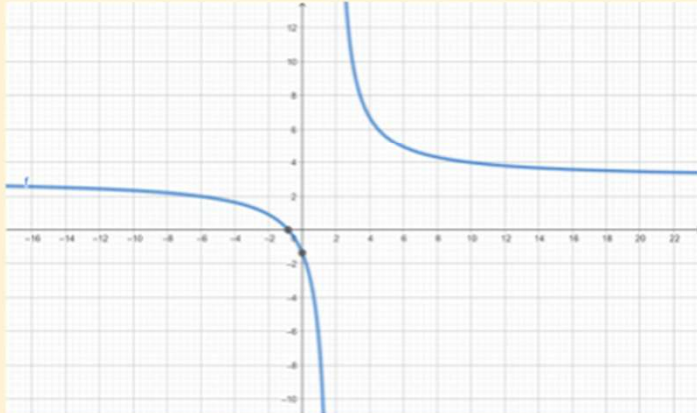
In conclusion, the function must have the vertical asymptote $x = -\frac{d}{c} \leq 0$.

In conclusion, the function must have the vertical asymptote $x = -\frac{d}{c} \leq 0$.

For example $(s_n), s_n = \frac{18n + 15}{6n - 11}, n \in \mathbb{N}$ we have $ad - bc < 0$, but it is not decreasing because $s_2 > s_1, s_{n+1} < s_n, \forall n \in \mathbb{N} \setminus \{1\}$.

Using GeoGebra, we can represent the graphic of function $f(x) = \frac{18x + 15}{6x - 11}, x \in \mathbb{R} \setminus \left\{\frac{11}{5}\right\}$.
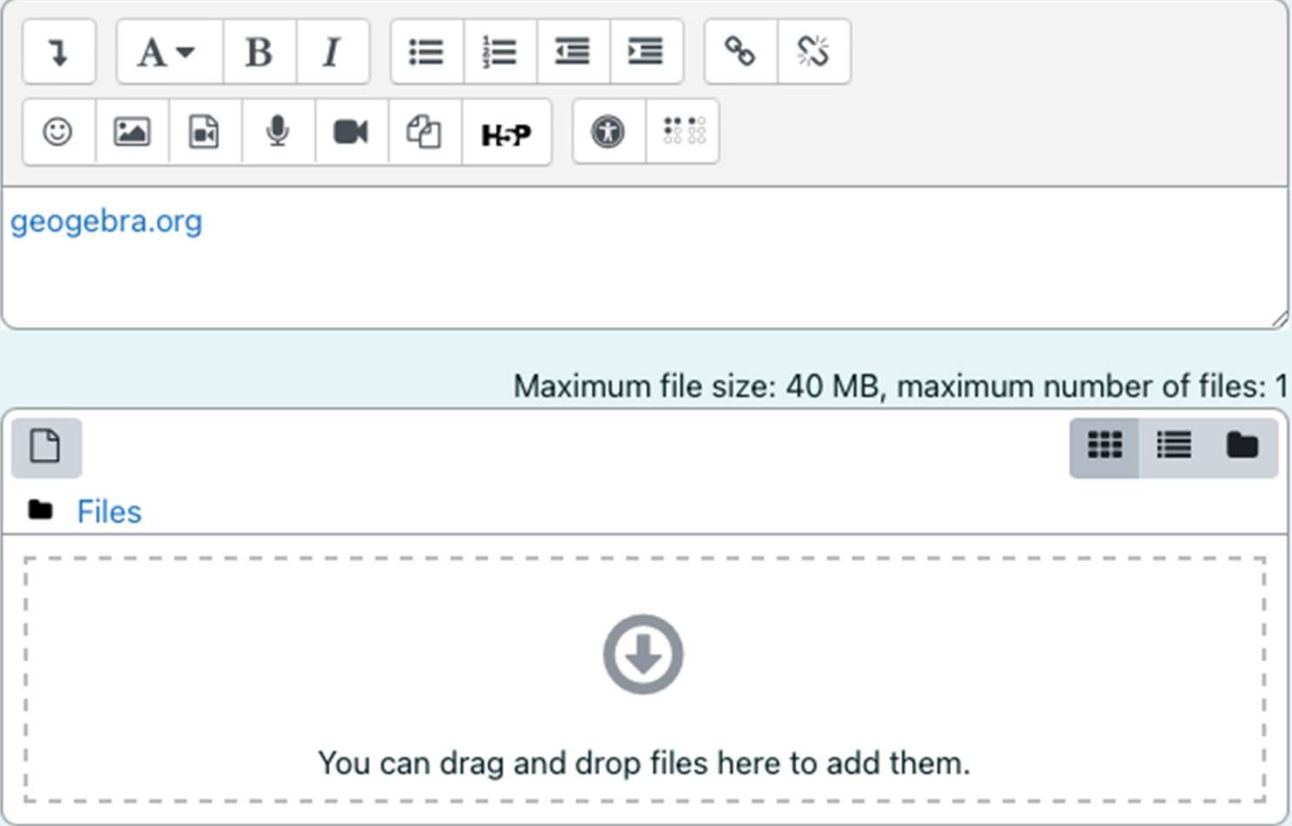
In conclusion, the function must have the vertical asymptote $x = -\frac{d}{c} \leq 0$.

You have correctly selected 1.
The correct answers are:

sequence (s_n) is increasing to 3 if $a = 3c, ad \geq bc, \frac{d}{c} \geq 0$

sequence (s_n) is decreasing to 3 if $a = 3c, ad \leq bc, \frac{d}{c} \geq 0$

One correct and one incorrect answer

This type of question is designed to allow students to access GeoGebra for creating the graph related to the question, after which it allows them to upload the file containing the graph generated in GeoGebra.

Graph the linear function $f(x) = -x + 6$.

geogebra.org

Maximum file size: 40 MB, maximum number of files: 1
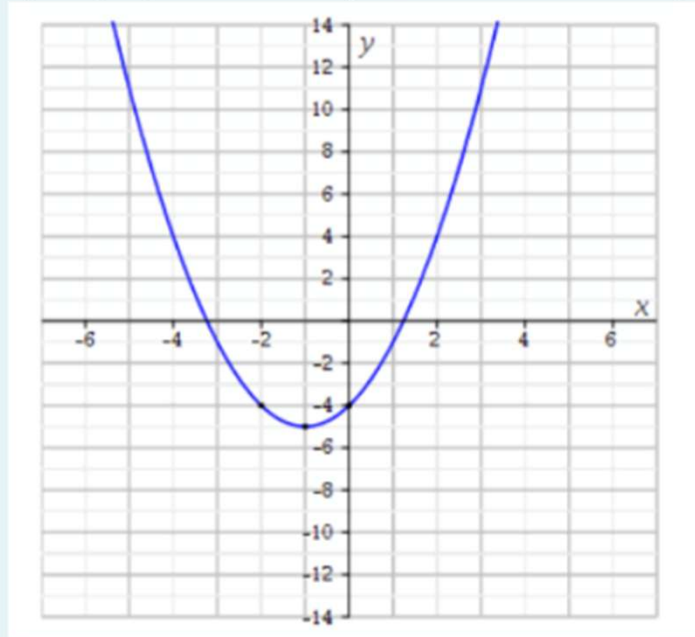
Files

You can drag and drop files here to add them.

Accepted file types

Image files to be optimised, such as badges .gif .jpe .jpeg .jpg .png

Pythagoras

Let $f(x) = k(x + a)^2 + b$ be a quadratic function.

Investigate, how the graph of the function depends on the values of the parameters a, b and k.

d) The figure below shows the graph $y = f(x)$ of a quadratic function f. Use the method that you described in prompt c) to determine f. Use the method that you described in prompt c) to determine f.

Another type of question: within the statement, you can also insert the graph related to the problem, and the students input equations directly into Moodle, and can see a preview before they submit.

$f(x) =$ `2*x^2+4*x-1`

Your last answer was interpreted as follows:

$$2 \cdot x^2 + 4 \cdot x - 1$$

The variables found in your answer were: $[x]$

Pythagoras

For the previous question, the student has the possibility to enter the correct answer in two forms:

❑   2*x^2+4*x-1 equivalent to: $2x^2 + 4x - 1$

⇕

❑   2*(x+1)^2-3 equivalent to: $2(x + 1)^2 - 3$

For this introduction, the question must be implemented in such a way as to allow writing the two correct forms. Therefore, when designing the questions, the teacher must think of all the writing methods of the correct answer.

If for a question there are several writings related to the correct answer, it is necessary to create a tree related to the potential correct answers.
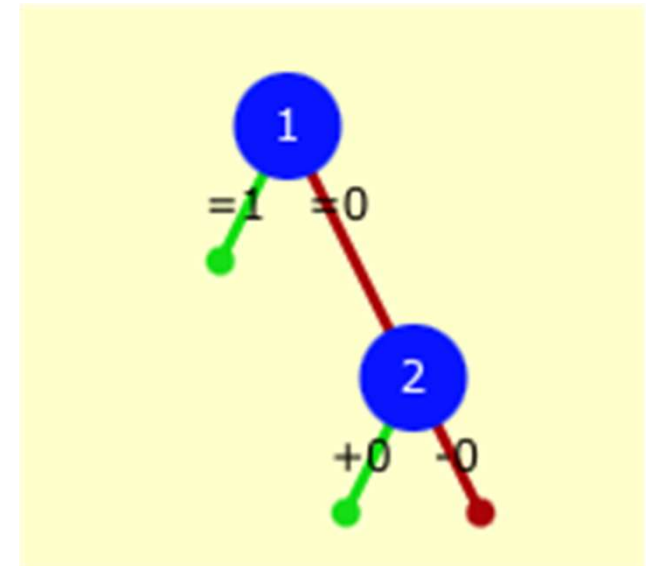
Node 1

Answer test: AlgEquiv ⇕   SAns: ans1   TAns: 2*x^2+4*x-1   Test options: [ ]

Quiet: No ⇕

Node 1 when true

Mod: = ⇕   Score: 1   Penalty: [ ]   Next: [stop] ⇕   Answer note: prt1-1-T

Node 1 true feedback

[editor toolbar: ↧ A▾ B I ≔ ≔ ⊟ ⊟ % ⊗ ☺ 🖼 🎞 🎤 🎥 ⧉ H-P ⊕ ⠿]

Node 1 when false

Mod: = ⇕   Score: 0   Penalty: [ ]   Next: Node 2 ⇕   Answer note: prt1-1-F

Node 1 false feedback

[editor toolbar: ↧ A▾ B I ≔ ≔ ⊟ ⊟ % ⊗ ☺ 🖼 🎞 🎤 🎥 ⧉ H-P ⊕ ⠿]

Delete node 1

Node 2

Answer test: AlgEquiv ⇕   SAns: ans1   TAns: 2*(x+1)^2-3   Test options: [ ]

Quiet: No ⇕

Node 2 when true

Mod: + ⇕   Score: 0   Penalty: [ ]   Next: [stop] ⇕   Answer note: prt1-2-T

Node 2 true feedback

[editor toolbar: ↧ A▾ B I ≔ ≔ ⊟ ⊟ % ⊗ ☺ 🖼 🎞 🎤 🎥 ⧉ H-P ⊕ ⠿]

Node 2 when false

Mod: - ⇕   Score: 0   Penalty: [ ]   Next: [stop] ⇕   Answer note: prt1-2-F

Node 2 false feedback

[editor toolbar: ↧ A▾ B I ≔ ≔ ⊟ ⊟ % ⊗ ☺ 🖼 🎞 🎤 🎥 ⧉ H-P ⊕ ⠿]

Delete node 2
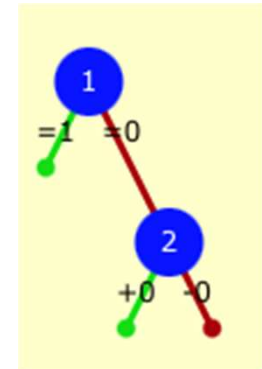
Implementation of the
STACK question type

Give examples of sets $V_1 \in \upsilon$ (1) and $V_2 \in \upsilon$ (0) such that $V_1 \cap V_2 \neq \emptyset$

1. $V_1 =$ [   ]

2. $V_2 =$ [   ]

The stack code:

Give examples of sets \(V_{1}\in\) \(\upsilon\) (1) and \(V_2\in\) \(\upsilon\) (0) such that \(V_1\cap V_2\neq\) \(\varnothing\)

1. \(V_1\) = [[input:ans1]] [[validation:ans1]] [[feedback:prt1]]

2. \(V_2\) = [[input:ans2]] [[validation:ans2]] [[feedback:prt2]]

˅ Input: ans1

Input type	❓	Algebraic input ⬍
Model answer	❓	(1-(1/10),1+(1/10))

˅ Input: ans2

Input type	❓	Algebraic input ⬍
Model answer	❓	(0-(1/100),0+(1/100))

Implementation of the
STACK question type

Potential response tree: prt2

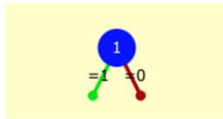|		
Question value		1
Auto-simplify	❓	Yes ⇕
PRT feedback style	❓	Formative ⇕
Feedback variables	❓	

This potential response tree will become active when the student has answered: **ans2**

Node 1	❓	Answer test	AlgEquiv ⇕	SAns	ans2	TAns	ans2
		Test options		Quiet	No ⇕		

| Node 1 when true | ❓ | Mod | = ⇕ | Score | 1 | Penalty | | Next | [stop] ⇕ | Answer note | prt2-1-T |

Node 1 true feedback ❓

Well done!

| Node 1 when false | ❓ | Mod | = ⇕ | Score | 0 | Penalty | | Next | [stop] ⇕ | Answer note | prt2-1-F |

Node 1 false feedback ❓

- represents on the axis of real numbers the neighborhood of a point $\(a\)$

Implementation of the
STACK question type

Pythagoras

True/False questions — a simple form of multiple choice question with just the two choices "True" and "Fals"

Determine whether the following relation is a function $\{(2, 1), (3, 2), (-1, 1), (0, 2)\}$

Select one:

○ True

⊙ False ✗

We can consider the function $f(x) = ax^3 + bx^2 + cx + d$, where a, b, c, d can be determined from the conditions:

$$\begin{cases} f(2) = 1 \\ f(3) = 2 \\ f(-1) = 1 \\ f(0) = 2 \end{cases}$$

The correct answer is 'True'.

Determine whether the following relation is a function $\{(2, 1), (3, 2), (-1, 1), (0, 2)\}$

Select one:

⊙ True ✔

○ False

Well done!

The correct answer is 'True'.

Correct answer

True ⬍

Feedback for the response 'True'.

Well done!

Feedback for the response 'False'.

We can consider the function $f(x)=ax^{3}+bx^{2}+cx+d$, where a, b, c, d can be determined from the conditions:

$$\begin{cases} f(2) = 1 \\ f(3) = 2 \\ f(-1) = 1 \\ f(0) = 2 \end{cases}$$

Implementation of the
True/False question type

Pythagoras

Multiple choice question

This type of question allows students to choose as an answer one or more of the items and has the possibility to access GeoGebra to calculate the correct answer.

For this type of question, for each student the items can be generated randomly, so that the items a, b, c, d are always in a different order.

At the time of implementation, you can choose the subtype of the question: 1 single correct answer or multiple correct answers:

ID number ❓

One or multiple answers?

One answer only ⬍

Multiple answers allowed
One answer only

Number the choices?

a., b., c., ... ⬍

Give an example of a sequence:

$(s_n) = \frac{an+b}{cn+d}$, $n \in \mathbb{N}$, where $a, b, c, d \in \mathbb{R}$ such that the sequence is:

a) increasing and convergent to 3;

b) decreasing and convergent to 3.

Use GeoGebra to check your sequences before you answer.

https://www.geogebra.org/calculator

Select the correct answer:

☐ a. sequence (s_n) is decreasing to 3 if $a = 3c$, $ad \le bc$

☐ b. sequence (s_n) is increasing to 3 if $a = 3c$, $ad \ge bc$, $\frac{d}{c} \ge 0$

☐ c. sequence (s_n) is increasing to 3 if $a = 3c$, $ad \ge bc$

☐ d. sequence (s_n) is decreasing to 3 if $a = 3c$, $ad \le bc$, $\frac{d}{c} \ge 0$

Check

Multiple choice question

Depending on this attribute, the answers will be distributed and the total score of 100 points. Example: if there are two answers, 50 points will be distributed for each answer, if there is only one correct answer, all the points will be awarded

Multiple choice question

If the question has more than one answer, the score must be divided according to how many correct items it has, so that if the student chooses only part of the correct answer, feedback for the partial answer will be sent to him.

Answers

Choice 1

sequence (\(s_n\)) is increasing to \(3\) if \(a=3c, ad\geq bc\)

Grade: None

Feedback

Choice 2

sequence (\(s_n\)) is decreasing to \(3\) if \(a=3c, ad\leq bc\)

Grade: None

Feedback

Choice 3

sequence (\(s_n\)) is increasing to \(3\) if \(a=3c, ad\geq bc\), \(\frac{d}{c}\geq 0\)

Grade: 50%

Feedback

Choice 4

sequence (\(s_n\)) is decreasing to \(3\) if \(a=3c, ad\leq bc\), \(\frac{d}{c}\geq 0\)

Grade: 50%

Feedback

Stack implementation in other areas
Computer Science

The applicability of evaluation systems with integrated learning with feedback shows its benefits, for example, a module that helps students prepare for a license exam. Within it, the test has integrated formative feedback that helps the student to deepen the subject, in cases where the answers are correct, giving details on alternative methods, and in case some notions are not known, to explain in a personalized way what exactly it has to learn, why he had inadvertences in his answers and what connections he needs to make in order to understand the scientific links between the component parts of the subject matter to be studied.

All this transcribes the difficulty of the learning process for content creators for such tests, whose experience is fundamental in creating such quality content.
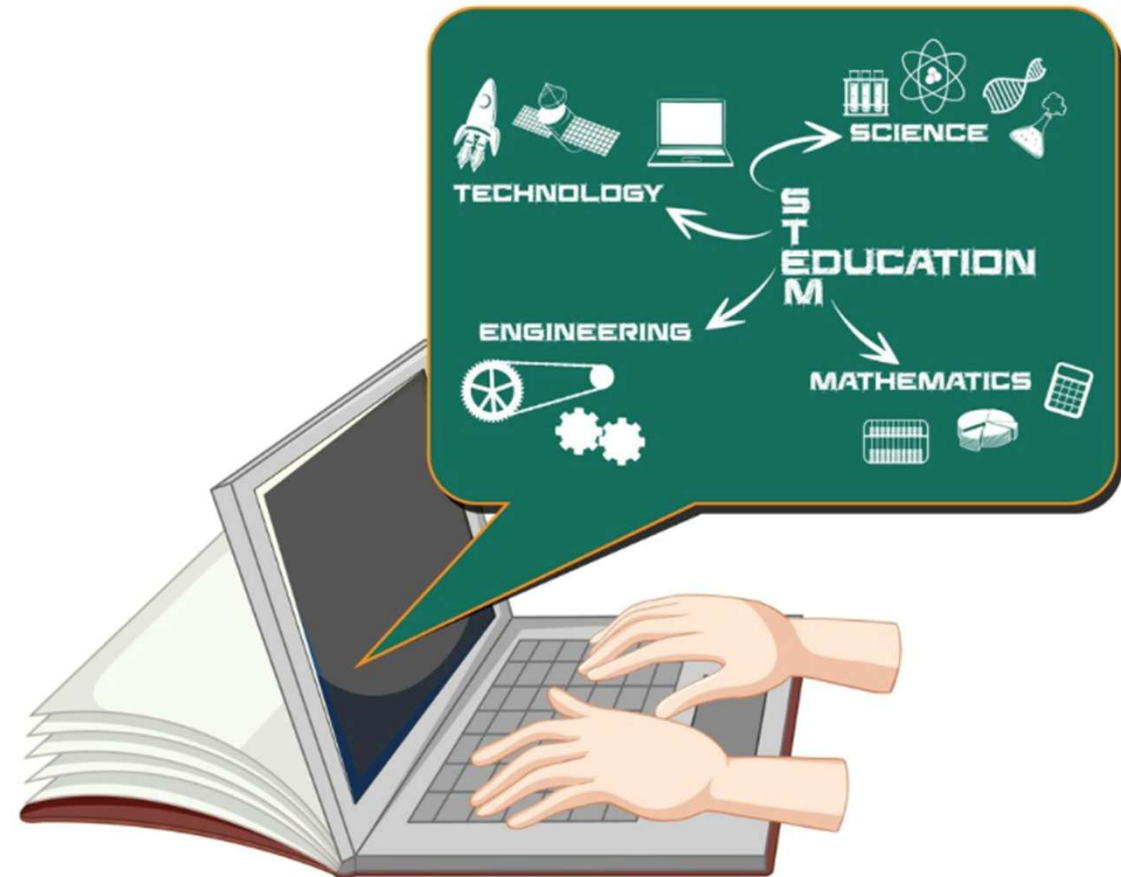
Question text ❗ ❓

What values will the following program display?

```c
int x = 9, y = 5, a, b, c;
b = a = x++;
y++;
c = x + y;
b = (++y) + a;
printf("\n%d %d %d", a, ++b, c);
```

a = [[input:ans1]] [[validation:ans1]][[feedback:prt1]]

b = [[input:ans2]] [[validation:ans2]][[feedback:prt2]]

c = [[input:ans3]] [[validation:ans3]][[feedback:prt3]]

Tidy STACK question

What values will the following program display?

```c
int x = 9, y = 5, a, b, c;
b = a = x++;
y++;
c = x + y;
b = (++y) + a;
printf("\n%d %d %d", a, ++b, c);
```

a = ⬜

b = ⬜

c = ⬜

Check

Pythagoras

Formative Feedback for previous Stack Questions

Standard feedback for correct

✔ Correct answer, well done.

You have carefully analyzed each step of the code and correctly calculated the values of the variables a, b, and c. It is essential to understand how the assignment and increment operators work in the context of complex expressions and to pay attention to the order in which these operations are performed.

An important point that you illustrated with this problem is how the increment (++) and assignment (=) operators can influence the values of variables and the final output of the program.

Standard feedback for partially correct

⬤ Your answer is partially correct.

Standard feedback for incorrect

✖ Incorrect answer.

int x = 9, y = 5, a, b, c;

b = a = x++;

y++;

c = x + y;

b = (++y) + a;

printf("\n%d %d %d", a, ++b, c);

In this program, we will analyze the values that the variables a, b, and c will display at the end of execution, taking into account the initial values and the operations performed on them within the code.

Initialization and assignment of values:

int x = 9, y = 5, a, b, c;: We declare the variables x, y, a, b and c, and initialize the variables x and y with the values 9, 5.

b = a = x++;: We assign the values of x to the variables a and b, and then increment x. So a gets the initial value of x, which is 9, and b gets the value of a.

Incrementing y and calculating c:

y++;: We increment y by 1, so y will become 6.

c = x + y;: We calculate the sum of x and y, which are now x=10 and 6, and store it in c. So c will be 16.

Modification of b:

b = (++y) + a;: We increment y by 1 (so y becomes 7) and add the value of a to y. Since a is 9, adding 9 to 7 gives 16.

Display the result:

Finally, we display the values of a, ++b and c, but before displaying the value of b we will increment it by 1, making it 17.

Determination of values:

a: Gets the value of x from the first assignment, so it will be 9.

b: Calculated in the previous step as 17.

c: It was previously calculated as 16.

Pythagoras

For this example there is only one correct answer, but, if we have more than one answer the grade of the answer will be divided in number of choice.

Percentaged multiple type choice tests

Specify the displayed values, if the numerical values 5 2 –3 are to be read in the indicated order:

```c
int main() {
    int a, b;
    scanf("%d%d%d", &a, &b, &a);
    printf("%d,", a);
    printf("%d,", b);
    printf("%d", a + b);
}
```

- a. there are syntax errors
- b. 5 2 7
- c. -3 2 -1
- d. 5 2 7

Answers

Choice 1 — 5 2 7
Grade: None
Feedback:

Choice 2 — -3 2 -1
Grade: 100%
Feedback:

Choice 3 — 5 2 7
Grade: None
Feedback:

Choice 4 — there are syntax errors
Grade: None
Feedback:

Combined Feedback for previous Multiple Choice Tests

⌄ Combined feedback

For any correct response

Your answer is correct.
You have used the scanf and printf functions correctly to read and display the read values, i.e. the sum of the first two numbers.

Explanations:

Function scanf("%d%d%d", &a, &b, &a); reads three integers from standard input. The last value read to overwrite the previous value of variable a.

The read values are then displayed using the printf function. So:

The variable a will display the last value read for a.

The variable b will display the value read for b.

The sum of the first two numbers, a + b, will display the sum of the values originally read for a and b.

If you enter the values 5, 2 and -3 in this order, the displayed values will be:

a: -3 (last value read for a)

b: 2

a + b: -1 (sum of initially read values for a and b: 5 + 2 = 7, but last read value for a was -3)

You have shown a clear understanding of how to use the scanf and printf functions.

For any incorrect response

Your answer is incorrect.
In this code, a sequence of three integers is read using the scanf function, and then the values read and the sum of the first two numbers are displayed.
Function scanf("%d%d%d", &a, &b, &a); is used to read three integers. Since the variable a is read twice, the last value read to overwrite the previous value of the variable a.

Then the read values are displayed using the printf function. In this case, the a variable, the b variable, and the sum of the first two numbers (a + b) are displayed.

If we enter the values 5, 2 and -3 in this order, following the instructions in the code:

The first value read is 5 and is stored in the variable a.

The second value read is 2 and is stored in the variable b.

The third value read is -3 and is stored again in the a variable, overwriting the previous value.

Thus, the displayed values will be:

a: -3 (last value read for a)

b: 2

a + b: -1 (sum of initially read values for a and b: 5 + 2 = 7, but last read value for a was -3)

Pythagoras

Matching questions

We consider the variables a, b, c, d and e. Write the correct version of the statements, so that the following assignments are not accompanied by conversions that modify the assigned values.

c='a'   [Choose... ▼]

a=3   [Choose... ▼]

d=-3.452 [Choose... ▼]

b=2.1   [Choose... ▼]

[Check]

We consider the variables a, b, c, d and e. Write the correct version of the statements, so that the following assignments are not accompanied by conversions that modify the assigned values.

c='a'   [char ▼]

a=3   [int ▼]

d=-3.4
         ✓ Choose...
         char
b=2.1   **float**
         int
Chec

⌄ Answers

Available choices

You must provide at least two questions and th

Question 1	↧ A▼ B I ≡ ≣ ≡ ≡ % ⌗
	a=3
Answer	int

Question 2	↧ A▼ B I ≡ ≣ ≡ ≡ % ⌗
	b=2.1
Answer	float

Question 3	↧ A▼ B I ≡ ≣ ≡ ≡ % ⌗
	c='a'
Answer	char

Question 4	↧ A▼ B I ≡ ≣ ≡ ≡ % ⌗
	d=-3.452
Answer	float

Pythagoras

For previous question we have implemented the formative feedback for:

❖ Correct answer

❖ Partilly correct answer

❖ Incorrect answer

Combined feedback

For any correct response

Your answer is correct and demonstrates a solid understanding of data types and their correct use in C!
You used the appropriate data types for the variables a, b, c, and d and assigned literal values without requiring implicit conversions to change the assigned values. By using the appropriate data types and values correctly, you ensure accurate data storage in variables and avoid unwanted changes.

For any partially correct response

Your answer is partially correct.
In the C language, data types are used to specify the nature of the data stored in variables and how they are interpreted by the program. Here is a full explanation for each data type mentioned in the given problem:

The char data type is used to store characters and is represented by a single byte in memory. Char variables can store a single ASCII character or a special character. In our case, when we assign the value 'a' to the variable c, we store the ASCII code of the character 'a', which is 97. This ensures that the variable c will contain the ASCII value corresponding to the character 'a'.

The double data type is used to store double-precision floating-point real numbers. Variables of type double are represented on 8 bytes in memory and provide higher precision than single-precision floating-point data types. When we assign the value -3.452 to the variable d, we store this value with double precision in memory.

The int data type is used to store integers. Variables of type int are represented by 4 bytes in memory and can store integer values in the range specified by the data type. When we assign the value 3 to the variable a, we store this value as an integer in memory.

The float data type is used to store single-precision floating-point real numbers. Float variables are represented by 4 bytes in memory and provide lower precision than double data types, but take up less memory space. When we assign the value 2.1 to the variable b, we must add the suffix f to specify that the value is a float, like this: 2.1f.

By using the correct data types and appropriate values, we ensure accurate data storage in variables and avoid implicit conversions that could change assigned values or affect data precision.

Options

☑ Show the number of correct responses once the question has finished

For any incorrect response

Your answer is incorrect.
In the C language, data types are used to specify the nature of the data stored in variables and how they are interpreted by the program. Here is a full explanation for each data type mentioned in the given problem:

The char data type is used to store characters and is represented by a single byte in memory. Char variables can store a single ASCII character or a special character. In our case, when we assign the value 'a' to the variable c, we store the ASCII code of the character 'a', which is 97. This ensures that the variable c will contain the ASCII value corresponding to the character 'a'.

The double data type is used to store double-precision floating-point real numbers. Variables of type double are represented on 8 bytes in memory and provide higher precision than single-precision floating-point data types. When we assign the value -3.452 to the variable d, we store this value with double precision in memory.

The int data type is used to store integers. Variables of type int are represented by 4 bytes in memory and can store integer values in the range specified by the data type. When we assign the value 3 to the variable a, we store this value as an integer in memory.

The float data type is used to store single-precision floating-point real numbers. Float variables are represented by 4 bytes in memory and provide lower precision than double data types, but take up less memory space. When we assign the value 2.1 to the variable b, we must add the suffix f to specify that the value is a float, like this: 2.1f.

By using the correct data types and appropriate values, we ensure accurate data storage in variables and avoid implicit conversions that could change assigned values or affect data precision.

Medicine

The versatility of evaluation systems with integrated learning and feedback extends beyond mathematics and computer science, showing significant benefits in the medical field. For instance, a module designed to help medical students prepare for their licensing exams can be implemented using Moodle Stack. Within this module, tests with integrated formative feedback play a crucial role in enhancing the learning process.

In the context of medical education:

❑ **Detailed Feedback for Correct Answers:** When students provide correct answers, the system can offer detailed explanations, discuss alternative methods of diagnosis or treatment, and provide additional context that deepens their understanding of the medical concepts.

❑ **Personalized Feedback for Incorrect Answers:** In cases where students' responses are incorrect, the system can deliver personalized feedback explaining the correct answers, highlighting common misconceptions, and offering specific insights into areas that need further study. This includes explaining why certain symptoms might lead to different diagnoses or the rationale behind specific medical procedures.

Medicine

❑ **Formative Learning:** The feedback can also guide students on how to integrate their knowledge across different medical disciplines, helping them understand the interconnections between various aspects of human health, disease mechanisms, and treatment protocols.

Implementing such a system in medical education underscores the importance of content creators who are not only knowledgeable in medicine but also skilled in pedagogical methods. Their expertise is fundamental in creating high-quality, informative content that meets the rigorous standards of medical education and ensures that students are well-prepared for their professional responsibilities.

Pythagoras

Ce metode sunt utilizate pentru a calcula frecvența cardiacă?

☑ a. Când ritmul cardiac este neregulat, se măsoară numărul de unde R în 10 secunde și ✔
   se înmulțește cu 6 pentru a obține frecvența cardiacă.

☐ b. Intervalul QRS se măsoară de la debutul complexului QRS până la sfârșitulundei T.

☑ c. Când ritmul cardiac este regulat, se împarte 1500 la numărul de casete mici (mm pe ✔
   hartiamilimetrica) dintre două unde R pentru a obține frecvența cardiacă.

☐ d. Când ritmul cardiac este neregulat, se calculează numărul de unde R într-un interval de
   6 secunde (30 casete mari =distant dintre doua linii ingrosate pe hartia milimetrica).

☐ e. Intervalul PP, intre doua unde P succesive, este egal cu intervalul RR în ritm neregulat.

Your answer is correct.
Frecventa cardiac reprezinta numarul complexelor QRS inregistrate intr-un minut (60 secunde
sau echivalentul a 1500 mm sau 30 casete mari) in caz de ritm regulat sau timp de 6 secunde
in caz de ritm neregulat

The correct answers are:
Când ritmul cardiac este regulat, se împarte 1500 la numărul de casete mici (mm pe
hartiamilimetrica) dintre două unde R pentru a obține frecvența cardiacă. ,

Când ritmul cardiac este neregulat, se măsoară numărul de unde R în 10 secunde și se
înmulțește cu 6 pentru a obține frecvența cardiacă.

Care afirmații sunt adevărate despre intervalul PR?

☐ a. Durata normala este între 0.12-0.20 secunde

☑ b. Intervalul PR se măsoară de la debutul undei P până la debutul complexului QRS ✔

☑ c. Valoarea normală este 0.22 secunde la tineri ✖

☐ d. Se măsoară de la începutul undei P la sfârșitul complexului QRS

☐ e. Valoarea normală este între 0.08-0.10 secunde

Your answer is partially correct.
Durata intervalului PR reprezintă timpul de conducere al impulsului electric de la generarea lui
de nodul sinusal până la traversarea nodului atrioventricular, deci măsurarea acestuia include și
unda P și nu include complexul QRS; durata variază între 0.12 și 0.20 secunde (0.22 secunde la
vârsta de peste 65 de ani).

You have correctly selected 1.
The correct answers are:
Intervalul PR se măsoară de la debutul undei P până la debutul complexului QRS ,

Durata normala este între 0.12-0.20 secunde

Pythagoras

Care dintre următoarele afirmații despre sistemul excitoconductor al inimii sunt corecte?

- ☑ a. Ramura stângă dă naștere fasciculelor anteroinferior și posterosuperior ✖
- ☐ b. Fasciculul His este irigat doar de arteracoronara stângă.
- ☐ c. Nodul sinusal se află la nivelul atriului drept, la joncțiunea dintre vena cavă superioară și auriculul drept.
- ☑ d. Fasciculul His este irigat doar de artera coronară dreaptă. ✖
- ☐ e. Nodul atrioventricular este continuat de fasciculul His care se divide în două ramuri, una dreaptă și una stângă.

Your answer is incorrect.
Sistemul de conducer eeste format din nodul sinusal(care se află la nivelul peretelui posterior al atriului drept, superior de creasta terminală), nodulul atrioventricular și fasciculul His ce se divide și ramurile stângă și dreaptă; ramura stângă se divide în fasciculul anterosuperior și posteroinferior; vascularizația fasciculului His are origine dublă.

The correct answers are:
Nodul sinusal se află la nivelul atriului drept, la joncțiunea dintre vena cavă superioară și auriculul drept. ,

Nodul atrioventricular este continuat de fasciculul His care se divide în două ramuri, una dreaptă și una stângă.

Cum se măsoară frecventa complexelor QRS?

- ☐ a. Se măsoară de la vârful unei unde R la vârful următoarei unde R.
- ☑ b. Intervalul dintre vârful undelor R succesive. ✔
- ☐ c. Se măsoară între două unde P succesive.
- ☑ d. Se măsoară de la începutul undei R la sfârșitul undei P. ✖
- ☐ e. Intervalul dintre începutul undei P și începutul complexului QRS.

Your answer is partially correct.
Intervalul R-R se referă la diferența dintre două bătăi consecutive ale inimii si reprezinta distanta dintre doua unde R succesive masurata la varful acestora.

You have correctly selected 1.
The correct answers are:
Intervalul dintre vârful undelor R succesive. ,

Se măsoară de la vârful unei unde R la vârful următoarei unde R.

Create, configure the test and assigning it to students

Identify the section where you want to enter the test (for example, the current week) and add a new activity (Add an activity or resource) of the grid test type (Quiz)

Add an activity or resource

Search

All   Activities   Resources

Assignment	Book	Chat	Choice	Database	External tool
Feedback	File	Folder	Forum	Glossary	H5P
IMS content package	Label	Lesson	Page	Quiz	SCORM package
Survey	URL	Wiki	Workshop		

Pythagoras

Create, configure the test and assigning it to students

Complete the requested data about the new created test:
➤ In the General section:
  • The name of the test (Name), a field that will also appear on the main page of the discipline;
  • Description of the test (Description), a field that can appear on the main page of the discipline if you check the appropriate box below the description;

☑ **Adding a new Quiz to Evaluation**❓

Expand all

∨ **General**

Name ❗

Description

☐ Display description on course page ❓

> **Timing**

> **Grade**

> **Layout**

> **Question behaviour**

> **Review options** ❓

> **Appearance**

> **Safe Exam Browser**

> **Extra restrictions on attempts**

> **Overall feedback** ❓

Pythagoras

Create, configure the test and assigning it to students

In the Timing section:
- Date and time when the test becomes available to students (Open the quiz);
- Date and time when the test becomes unavailable to students (Close the quiz). Attention: if students are still working at that time, the test will be closed automatically;

✓ Timing

| Open the quiz | ❓ | 5 ⬍ | March ⬍ | 2024 ⬍ | 22 ⬍ | 58 ⬍ | 📅 ☑ Enable |
| Close the quiz | | 5 ⬍ | March ⬍ | 2024 ⬍ | 23 ⬍ | 58 ⬍ | 📅 ☑ Enable |

Time limit ❓ | 40 | minutes ⬍ | ☑ Enable

When time expires ❓ | Open attempts are submitted automatically

Create, configure the test and assigning it to students

In the Extra restrictions on attempts section:

- From this section you can configure a password for accessing the test (to set it, press the Pencil icon);

Extra restrictions on attempts

Require password   Test ✏

Show less...

Require network address

Enforced delay between 1st and 2nd attempts   0   minutes   ☐ Enable

Enforced delay between later attempts   0   minutes   ☐ Enable

Browser security   None

Allow quiz to be attempted offline using the mobile app   No

Pythagoras

Create, configure the test and assigning it to students

- In the Question behavior section:
  - Choose for mixing answers within a question (Yes) or for keeping the order of the answers within the questions (No). We recommend mixing the answers like this make it harder for students to communicate their answers to questions;
- In the Review Options section:
  - We recommend unchecking The attempt box in the last two columns (Later, while the quiz is still open, respectively After the quiz is closed) to prevent students from viewing the grid quiz (the questions and correct answers) after they have completed the assessment. Students will only be able to view this information immediately after the assessment is complete (approximately 5 minutes). Students will also be able to view their grade at any point in time after completing the assessment.

∨ Question behaviour

| Shuffle within questions | ❓ | No ⬍ |

| How questions behave | ❓ | Deferred feedback ⬍ |

Show more...

∨ Review options ❓

During the attempt
- ☑ The attempt ❓
- ☑ Whether correct ❓
- ☑ Marks ❓
- ☑ Specific feedback ❓
- ☑ General feedback ❓
- ☑ Right answer ❓
- ☐ Overall feedback ❓

Immediately after the attempt
- ☑ The attempt
- ☑ Whether correct
- ☑ Marks
- ☑ Specific feedback
- ☑ General feedback
- ☑ Right answer
- ☑ Overall feedback

Later, while the quiz is still open
- ☑ The attempt
- ☑ Whether correct
- ☑ Marks
- ☑ Specific feedback
- ☑ General feedback
- ☑ Right answer
- ☑ Overall feedback

After the quiz is closed
- ☑ The attempt
- ☑ Whether correct
- ☑ Marks
- ☑ Specific feedback
- ☑ General feedback
- ☑ Right answer
- ☑ Overall feedback

Pythagoras

Create, configure the test and assigning it to students

The remaining time for solving the problems will be displayed on the page of each question, so that at any moment the student will be able to see how much time he has until the end of the test.

Time left 0:39:45

Question 1

Not yet answered

Marked out of 1.00

⚑ Flag question

⚙ Edit question

Does the table below represent a linear function? If so, find a linear equation that models the data:

x	-6	0	2	4
g(x)	14	32	38	44

Next page

Create, configure the test and assigning it to students

Save the changes and enter the stage of adding questions to the test. After you have created the test, it is time to assign it to the students enrolled in the course.

The student will know from the beginning between which dates and times he will be able to solve the test and how much time he has available from the moment the test starts until its completion, if you have set this part.

Opened: Tuesday, 5 March 2024, 10:58 PM
Closes: Tuesday, 5 March 2024, 11:58 PM

Functions Evaluation

Preview quiz

To attempt this quiz you need to know the quiz password

˅ **Workshop PORTO**

QUIZ
part I

Mark as done

QUIZ
part II

Mark as done

Pythagoras

Create, configure the test and assigning it to students

To complete the test, the student will press Finish attempt..., placed in the lower right area of the page.

Finish attempt ...

A summary of the answers is presented before the test is completed; At this point, the student can see the questions he has not answered yet, as well as how much time he has left.

part I
Summary of attempt

Question	Status
1	Incorrect
2	Incorrect
3	Incorrect
4	Not complete
5	Not complete
6	Not complete
7	Not complete
8	Not complete

Return to attempt

Submit all and finish

If he wants to complete, he will press Submit all and finish, followed by a confirmation from him.

Confirmation ✕

Once you submit, you will no longer be able to change your answers for this attempt.

Submit all and finish   Cancel

TESTING

To highlight various advantages of using the STACK system in enhancing the learning experience, particularly through formative feedback that supports students in grasping mathematical concepts, the team has developed two sets of tests for today's session. These assessments are designed to demonstrate how STACK provides personalized, real-time feedback, constructive feedback that helps clarify misunderstandings and fosters deeper understanding. By offering detailed, step-by-step guidance, the platform promotes active learning and enables students to progressively build their knowledge, not only in mathematics but also in related scientific disciplines. This practical demonstration will emphasize STACK's role as a powerful educational tool that aids in continuous learning and assessment.

$$f(t) = \frac{dF(t)}{dt} = -\frac{dR(t)}{dt}.$$

$$z(t)\Delta t = P\{t<T<t+\Delta|T>t\},$$

$$R(t) = \exp\left(-\int_0^t z(x)dx\right),$$

$$CMBO = \int_0^\infty R(t)dt.$$

Test AM1

Course   Settings   Participants   Grades   Reports   More ⌄

> **General**
<div align="right">Collapse all</div>

> **Topic 1**

> **Evaluation**

> **Computer Science**

> **Medicine**

⌄ **Workshop PORTO**
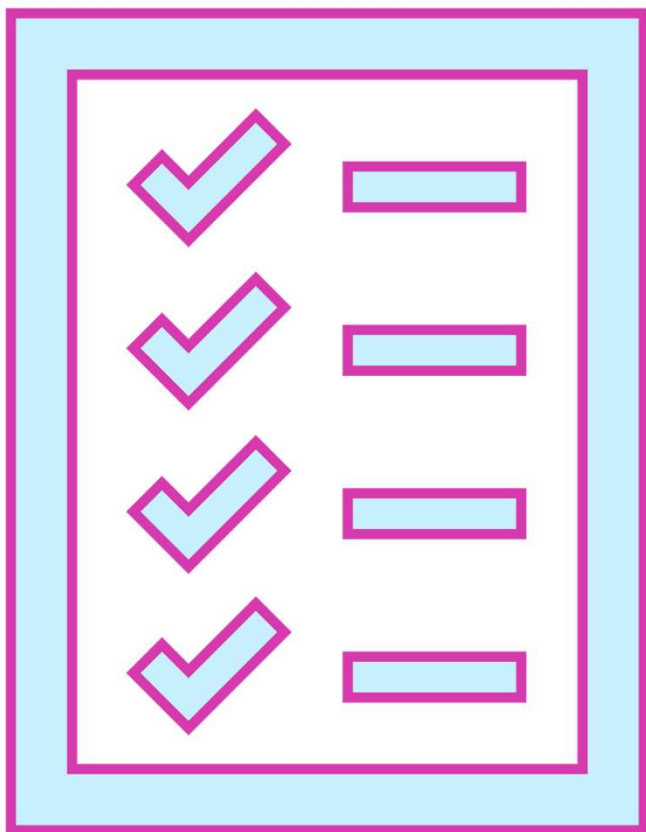
	QUIZ part I	Mark as done

	QUIZ part II	Mark as done

The first test ([Part I](#)) consists of 8 progressively structured questions, each designed to offer formative feedback for both correct and incorrect responses. This type of feedback is essential for guiding students in understanding and solving problems by providing detailed clarifications and explanations, which facilitate continuous learning.

The second test ([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. This differentiated feedback not only indicates correctness or errors but also provides clear explanations that help students grasp the underlying concepts and improve their future performance.
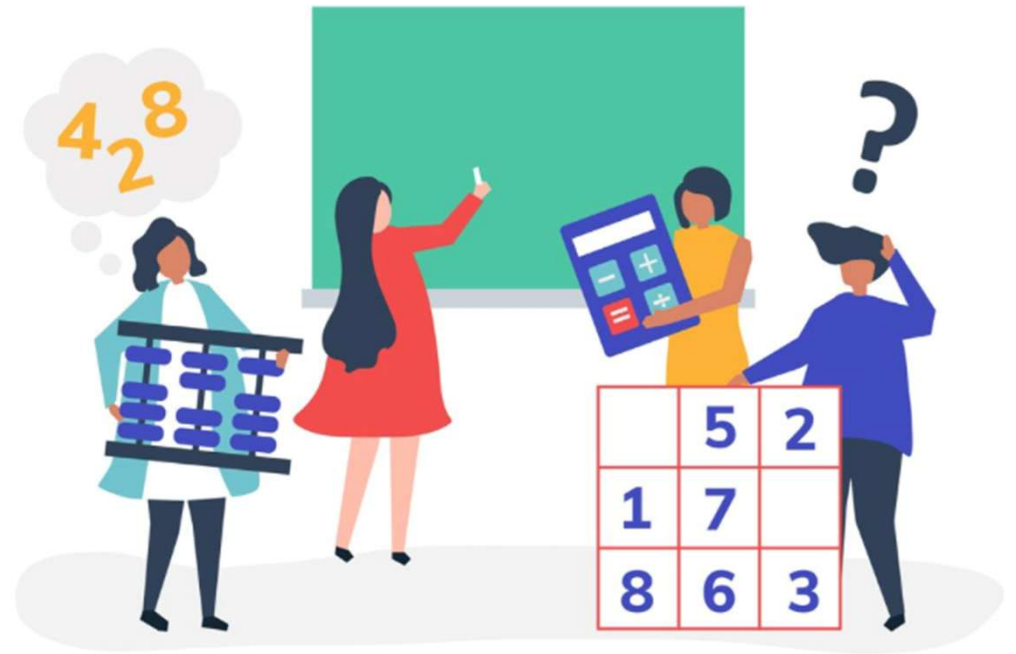
Guide for entering the answer

- 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^2

- $\frac{3}{5x} + 2x$ is entered as $(3)/(5*x) + 2*x$

LET'S START TESTING!!!

THANK YOU FOR YOUR ATTENTION AND TIME!