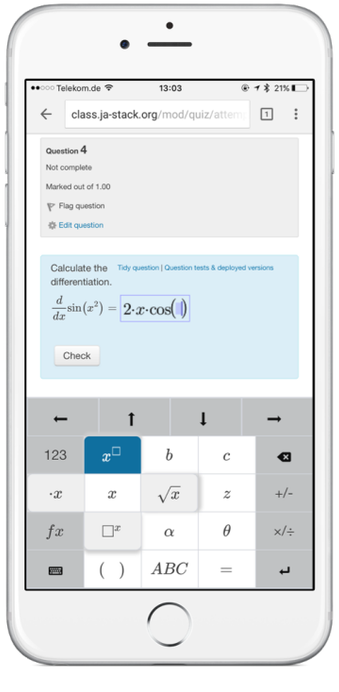
Sharing experiences using STACK connected from Sakai through LTI

Yasuyuki NAKAMURA (Nagoya University, Japan)
Takahiro NAKAHARA (Sangensha LLC.)



Special thanks to
Kako ITO and Kazusa FUJIMOTO

Contents

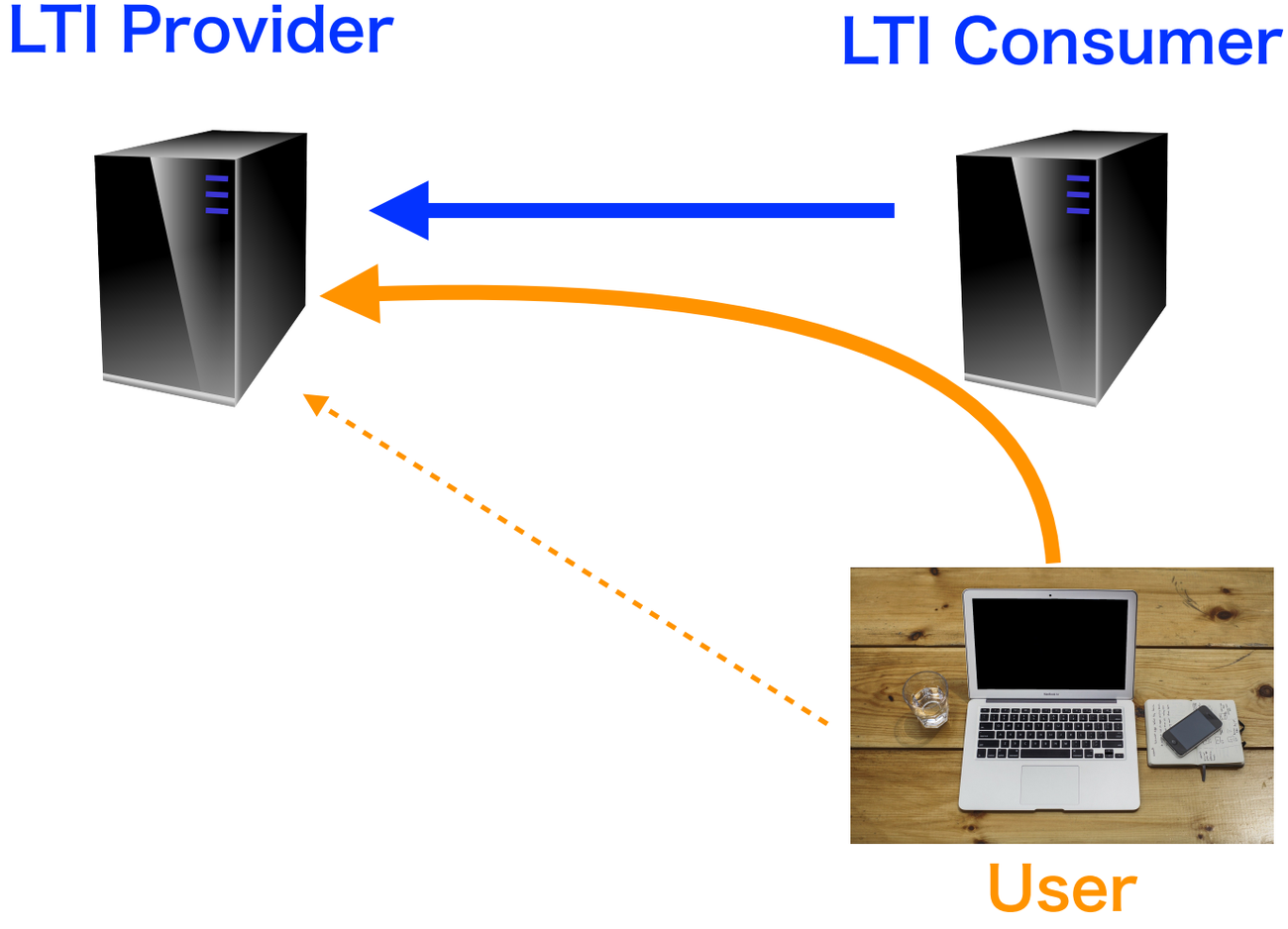
- Motivation
- What is LTI?
- How to access to STACK from Sakai through LTI
  - Preparation as a provider for Moodle
  - Preparation as a consumer for Sakai
- Examples of use of STACK from Sakai
- Some difficulties
- Summary

Motivation

- I have a Calculus class with 70 students and marked assignments by hand for first 4 weeks.
- It takes hours to mark and I would like to automate where I can automate
  - Using e-assessment system for mathematics
- Nagoya Universities' official LMS is Sakai and there is no plugin for e-assessment for mathematics
- I have a Moodle server with STACK outside the university
- I do not want students to have more IDs
- I decided to use STACK from Sakai through LTI

What is LTI

- Learning Tools Interoperability (LTI) is an education technology specification developed by the IMS Global Learning Consortium.
- It specifies a method for a learning system to invoke and to communicate with external systems.
- For example, LMS may use LTI to host course content and tools provided by external systems on a web site, without requiring a learner to log in separately on the external systems.



Preparation as a provider for Moodle

class.ja-stack.org

Dashboard / Site administration / Plugins / Authentication / Manage authentication

Blocks editing on

Manage authentication

Available authentication plugins

Name	Users	Enable	Up/Down	Settings	Test settings	Uninstall
Manual accounts	1398			Settings		
No login	0					
LTI	109					
CAS server (SSO)	0			Settings	Test settings	Uninstall

class.ja-stack.org

Dashboard / Site administration / Plugins / Enrolments / Manage enrol plugins

Blocks editing on

Manage enrol plugins

Available course enrolment plugins

Name	Instances / enrolments	Version	Enable	Up/Down	Settings	Test settings	Uninstall
Manual enrolments	32 / 1357	2019111800			Settings		
Guest access	32 / 0	2019111800			Settings		Uninstall
Self enrolment	32 / 0	2019111800			Settings		Uninstall
Cohort sync	7 / 70	2019111800			Settings		Uninstall
Publish as LTI tool	4 / 108	2019111800			Settings		Uninstall

Preparation as a provider for Moodle

My class

Published tools

A tool may be shared with another site by providing either launch details or a registration URL.

More help

Name	Launch details	Registration URL	Edit
Course: 数学入門2020	Cartridge URL: https://class.ja-stack.org/[redacted] Secret: [redacted] Launch URL: https://class.ja-stack.org/[redacted]	https://class.ja-stack.org/[redacted]	

Add

Preparation as a consumer for Sakai

NUCT

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Many Body Systems A(2020,Spring2/Thursday2) | Modern Mathematics and Mechanics(2020,Spring1/Thursday2) | Information Physics(2020,Fall1/Thursday2)

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- Tests & Quizzes
- STACK

SITE INFO

Edit Site Information | Manage Tools | Tool Order | Add Participants | Manage Groups | Link to Parent Site | External Tools | Manage Access | Import from Site | Import from Archive File | User Audit Log

数学入門(2020年度春学期/木1)

Term	
Roster(s) with site access	
Site URL	https://ct.nagoya-u.ac.jp/portal/site/2020_1_0014107
Site contact and email	Sakai Administrator
Available to	Site participants only
Modification date	May 22, 2020 5:04 pm
Modified by	中村 泰之
Display in Site Browser	Yes (Tell me more...)
Creation date	Mar 12, 2020 10:06 pm
Appearance	
LaTeX	Enabled for the site

Preparation as a consumer for Sakai

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- STACK

SITE INFO

Installed Tools | Tool Links

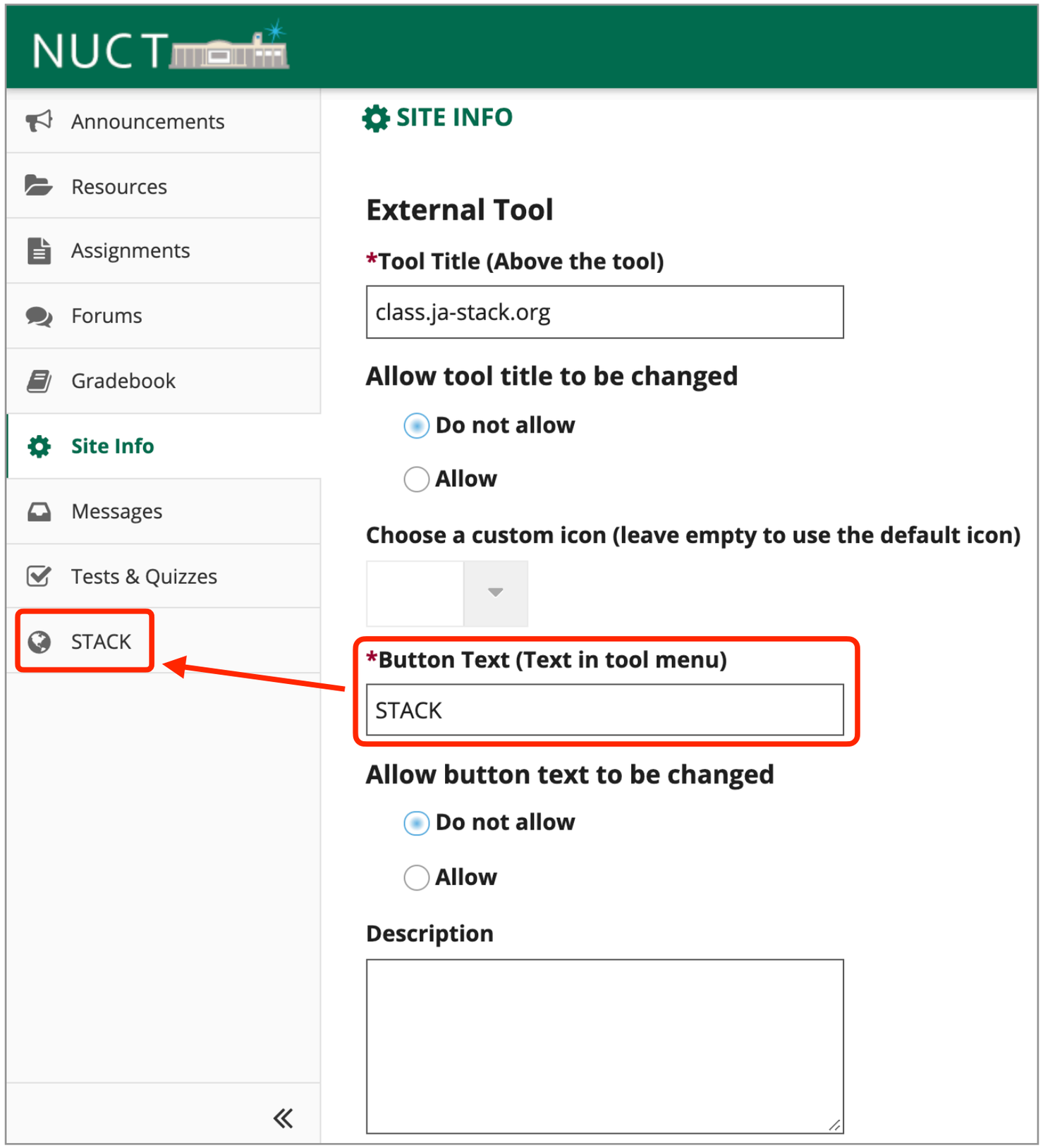
Install LTI 1.1 Tool

Below are the external tools that have been added to the system. Select the "Edit" link to revise the launch settings. Select the "Add External Tool to System" link to make additional external tools available.

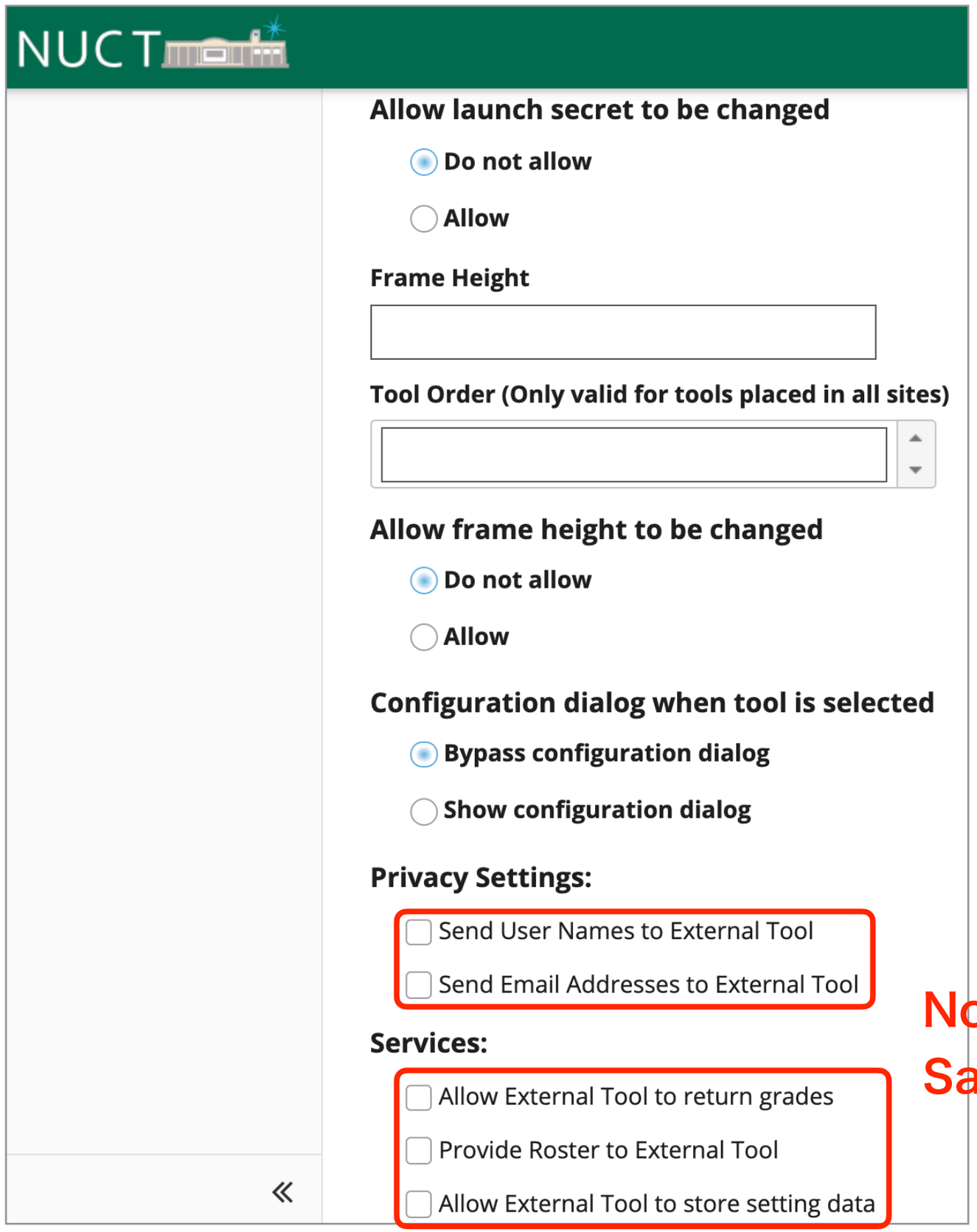
Title	URL	Site ID	Action
Search by Title	Search by URL	Search by Site ID	
class.ja-stack.org	https://class.ja-stack.org/		Edit / Delete

If you have a key and secret, you must first install the tool using this screen, and then to launch the tool, you need to create a tool configuration for the tool. You can test launch your tool and get a URL for your tool from the tool configuration screen.

Preparation as a consumer for Sakai



Preparation as a consumer for Sakai



Nothing is sent from Sakai to Moodle

Preparation as a consumer for Sakai

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Tool Status

- (•) **Enabled**
- ( ) **Disabled**

***Launch URL**

https://class.ja-stack.org/

Allow launch URL to be changed

- (•) **Do not allow**
- ( ) **Allow**

Launch Key

classjastack

Allow launch key to be changed

- (•) **Do not allow**
- ( ) **Allow**

Launch Secret

****

Allow launch secret to be changed

- (•) **Do not allow**
- ( ) **Allow**

Dashboard / My courses / 数学入門2020 / Published as LTI tools

Published tools

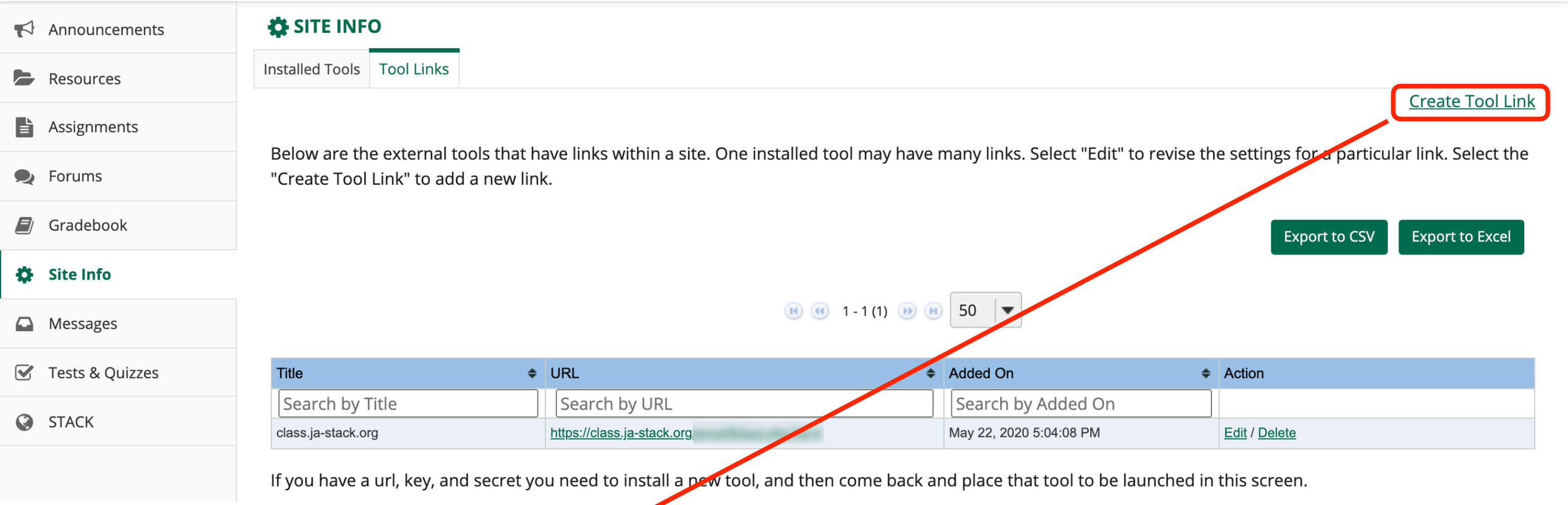
A tool may be shared with another site by providing either launch details or a registration URL.

More help

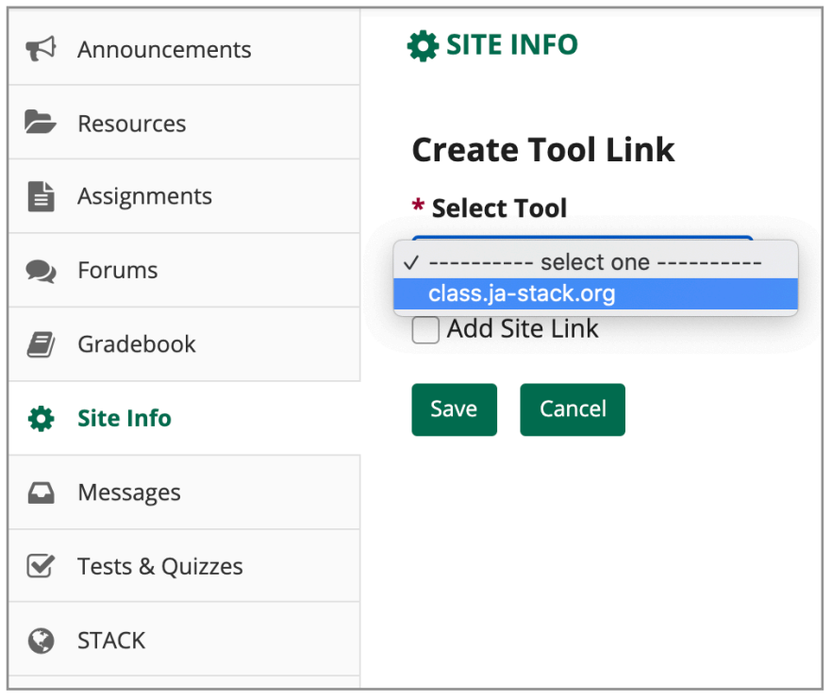
Name	Launch details	Registration URL	Edit
Course: 数学入門2020	Cartridge URL: https://class.ja-stack.org/ Secret: Launch URL: https://class.ja-stack.org/	https://class.ja-stack.org/	

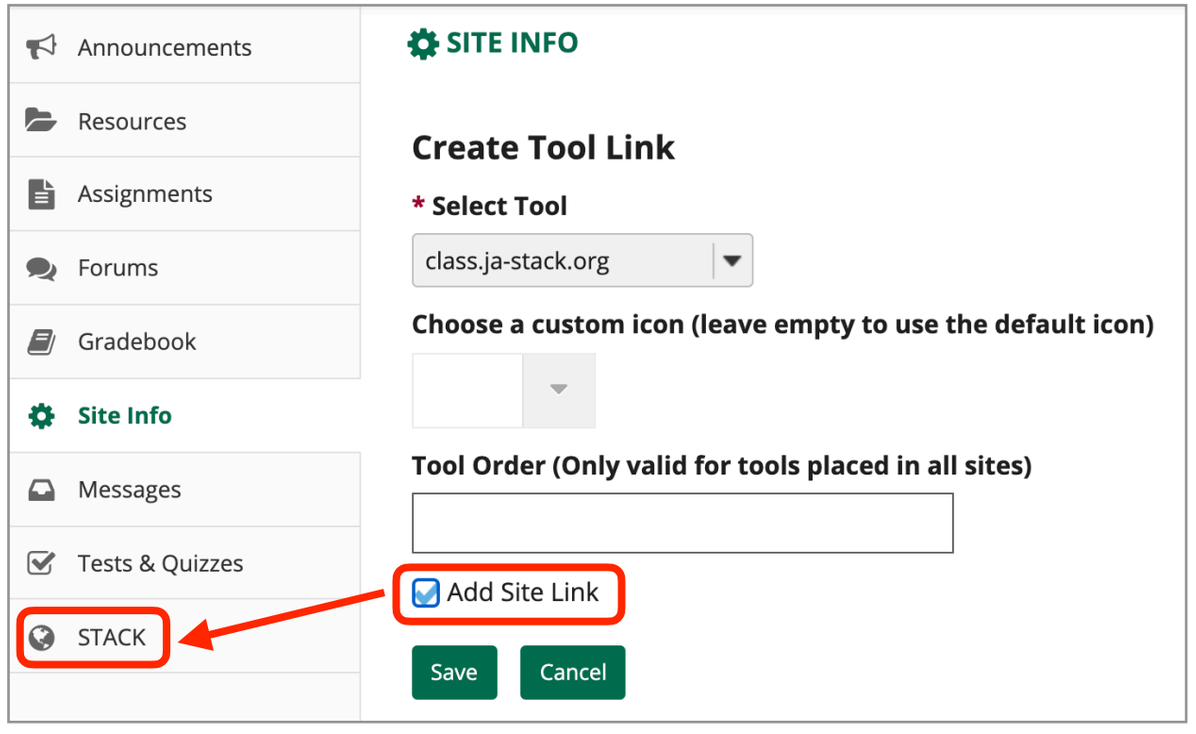
Add

Preparation as a consumer for Sakai

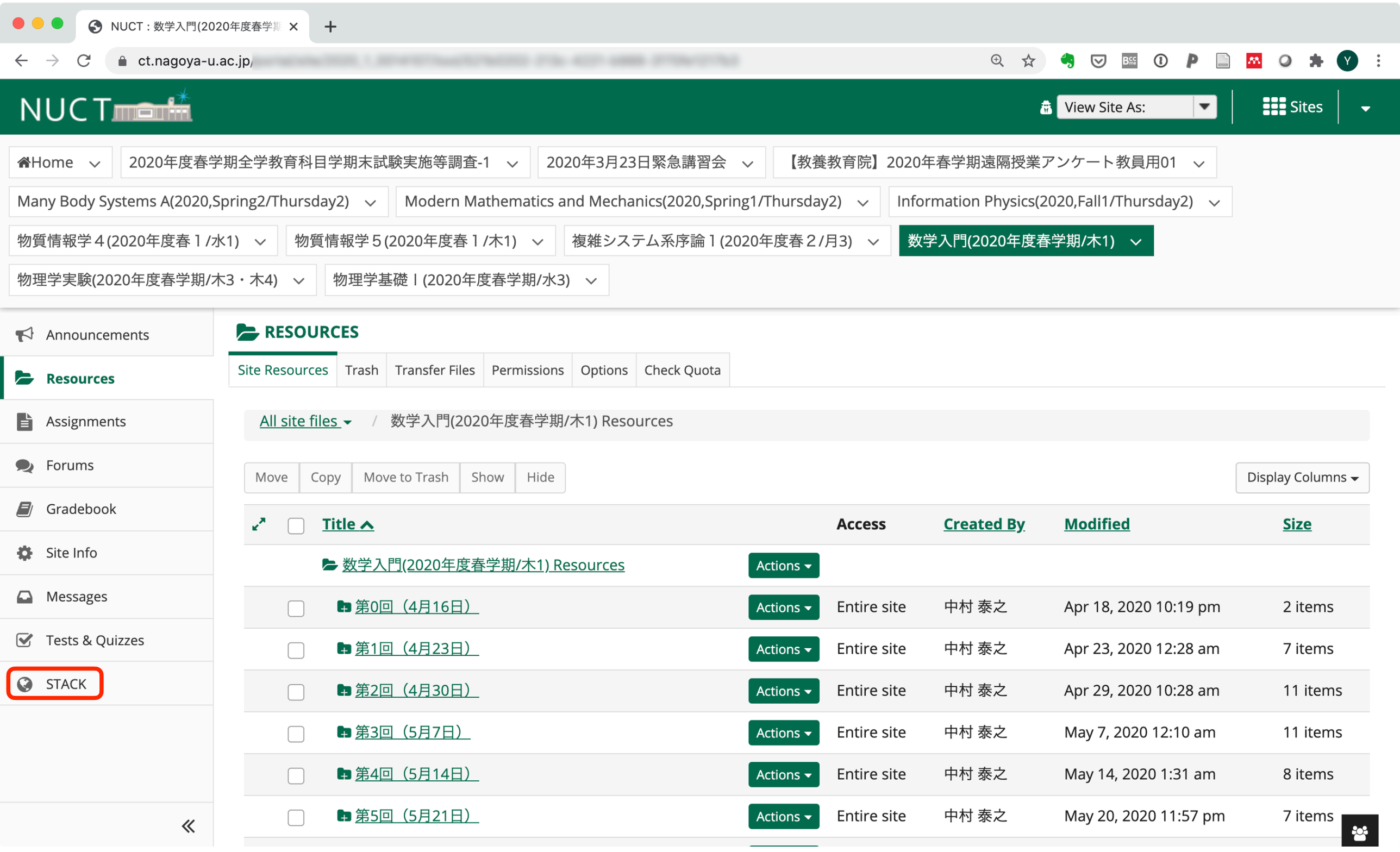


If you have a url, key, and secret you need to install a new tool, and then come back and place that tool to be launched in this screen.

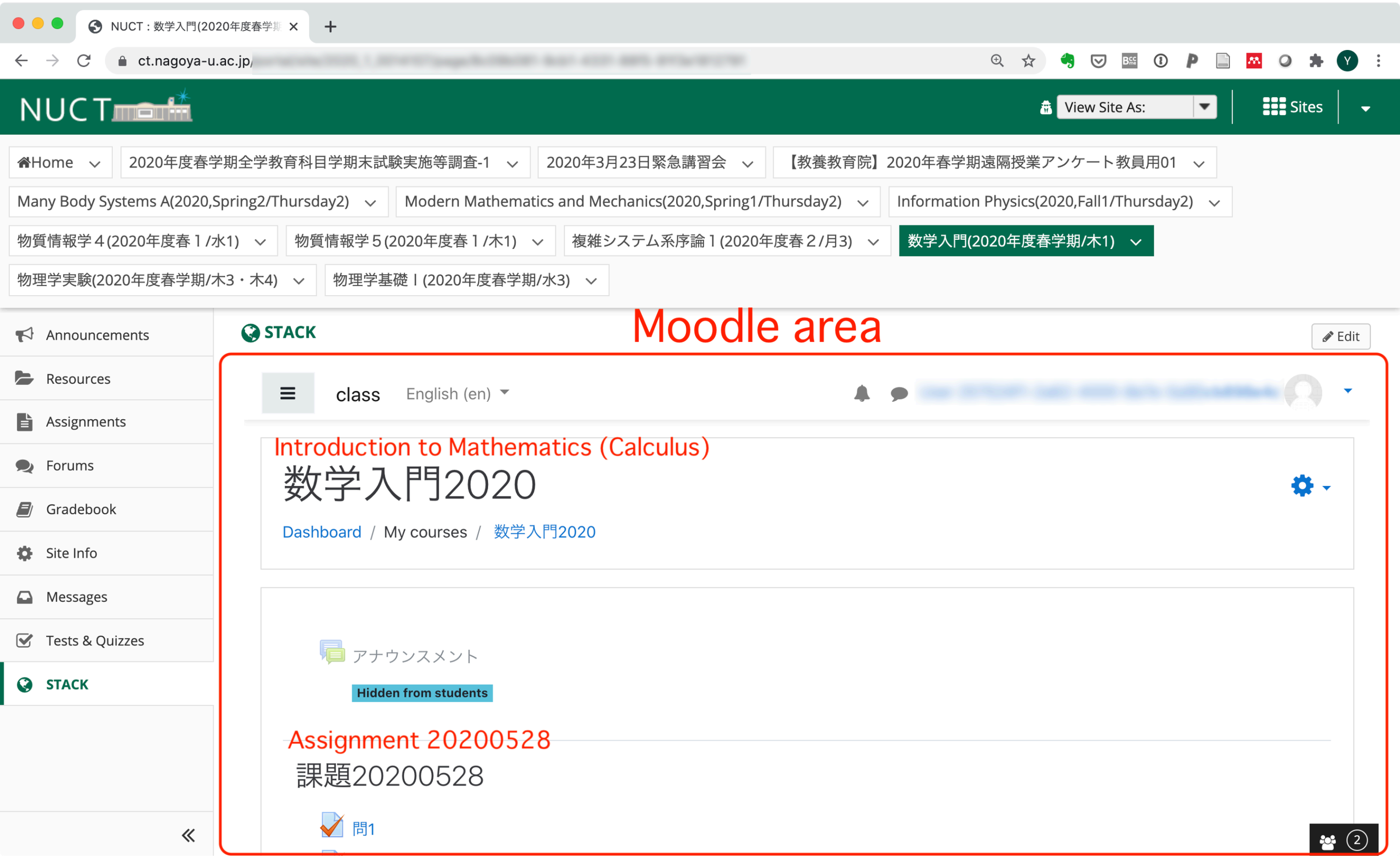




Access to STACK from Sakai



Access to STACK from Sakai



Examples of use of STACK from Sakai

PC

NUCT : 数学入門(2020年度春学期

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メッセージ
小テスト
STACK

STACK

編集

class English (en)

数学入門2020

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Question 1
Not complete
Marked out of 1.0
Flag question
Edit question

Tidy question | Question tests & deployed variants

$\frac{\mathrm{d}}{\mathrm{d}x} e^{2x-1} =$ 2*exp(2*x-1)

Your last answer was interpreted as follows:

$$2\ \exp(2\,x - 1)$$

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

Check

表示ロールを変更:
講義サイトー覧
編集
サイト情報
メッセージ
小テスト
STACK
Dashboard / My courses / 数学入門2020 / その他 / 問1 (コピー) / Preview

Question 1
Answer saved
Mark 1.0 out of 1.0
Flag question
Edit question

Tidy question | Question tests & deployed variants

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

Check

よくできました。正解です。**Well done, correct answer**

Marks for this submission: 1.0/1.0.

iPhone

2:18

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Tidy question | Question tests & deployed variants

次の積分を計算せよ。

$$\int \frac{1}{\cos(x)+1}\mathrm{d}x$$

tan(x/2)+C

Your last answer was interpreted as follows:

$$\tan\left(\frac{x}{2}\right)+C$$

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

Finish attempt ...

◀ 微分4 (hidden)

Jump to...

問1 (コピー) (hidden) ▶

2:19

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Tidy question | Question tests & deployed variants

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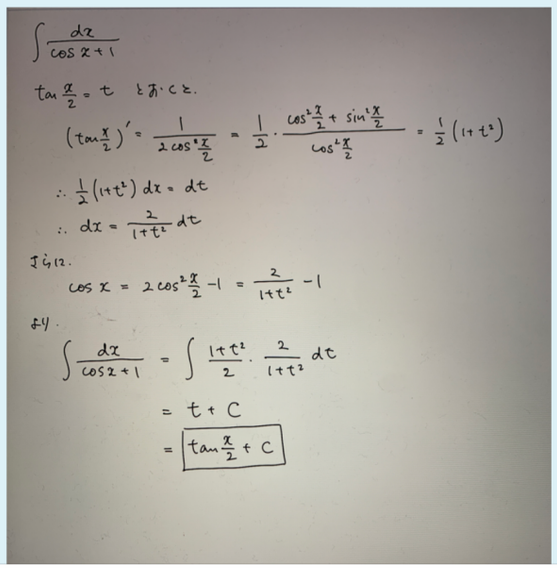

2:21

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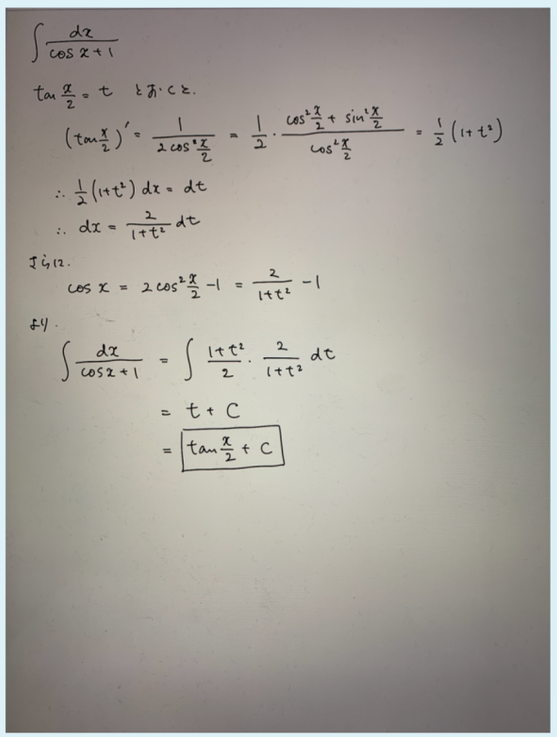

✔ よくできました。正解です!
Well done, correct answer

iPad

2:27 6月29日(月) 91%

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STACK

class English (en)

数学入門2020

Dashboard / My courses / 数学入門2020 / その他 / 問5 (コピー) / Preview

Question 1
Not yet answered
Marked out of 1.00
Flag question
Edit question

Tidy question |

次の積分を計算せよ。

$$\int \frac{1}{\cos(x)+1}\,dx$$

2:34 6月29日(月) 93%

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- 課題
- フォーラム
- 成績簿
- サイト情報
- メッセージ
- 小テスト
- STACK

class 日本語 (ja)

問題 1
未解答
最大評点 1.00
問題にフラグを付ける
問題を編集する

問題の整頓 | 問題のテストとデプロイ

次の積分を計算せよ。

$$\int \frac{1}{\cos(x)+1}\,dx$$

tan(x/2)+C

あなたの入力した数式は次のとおりです：

$$\tan\left(\frac{x}{2}\right)+C$$

あなたの解答の中で使われている変数は$[C,x]$ です

2:33 6月29日(月) 92%

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$$\int \frac{dx}{\cos x+1}$$

$\tan\frac{x}{2}=t$ とおくと.

$$\left(\tan\frac{x}{2}\right)'=\frac{1}{2\cos^2\frac{x}{2}}$$

$$=\frac{1}{2}\frac{\cos^2\frac{x}{2}+\sin^2\frac{x}{2}}{\cos^2\frac{x}{2}}$$

$$=\frac{1}{2}(1+t^2)$$

$$\therefore \frac{1}{2}(1+t^2)\,dx=dt \rightarrow dx=\frac{2}{1+t^2}\,dt$$

さらに.

$$\cos x=2\cos^2\frac{x}{2}-1=\frac{2}{1+t^2}-1$$

以上より

$$\int \frac{dx}{\cos x+1}=\int \frac{1}{\frac{2}{1+t^2}}\cdot\frac{2}{1+t^2}\,dt$$

$$=\int dt$$

$$=t+C$$

$$=\boxed{\tan\frac{x}{2}+C}$$

テストを終了する

93%

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表示ロールを変更: 講義サイト一覧

日本語 (ja)

問題の整頓 | 問題のテストとデプロイ

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$$=\int dt$$

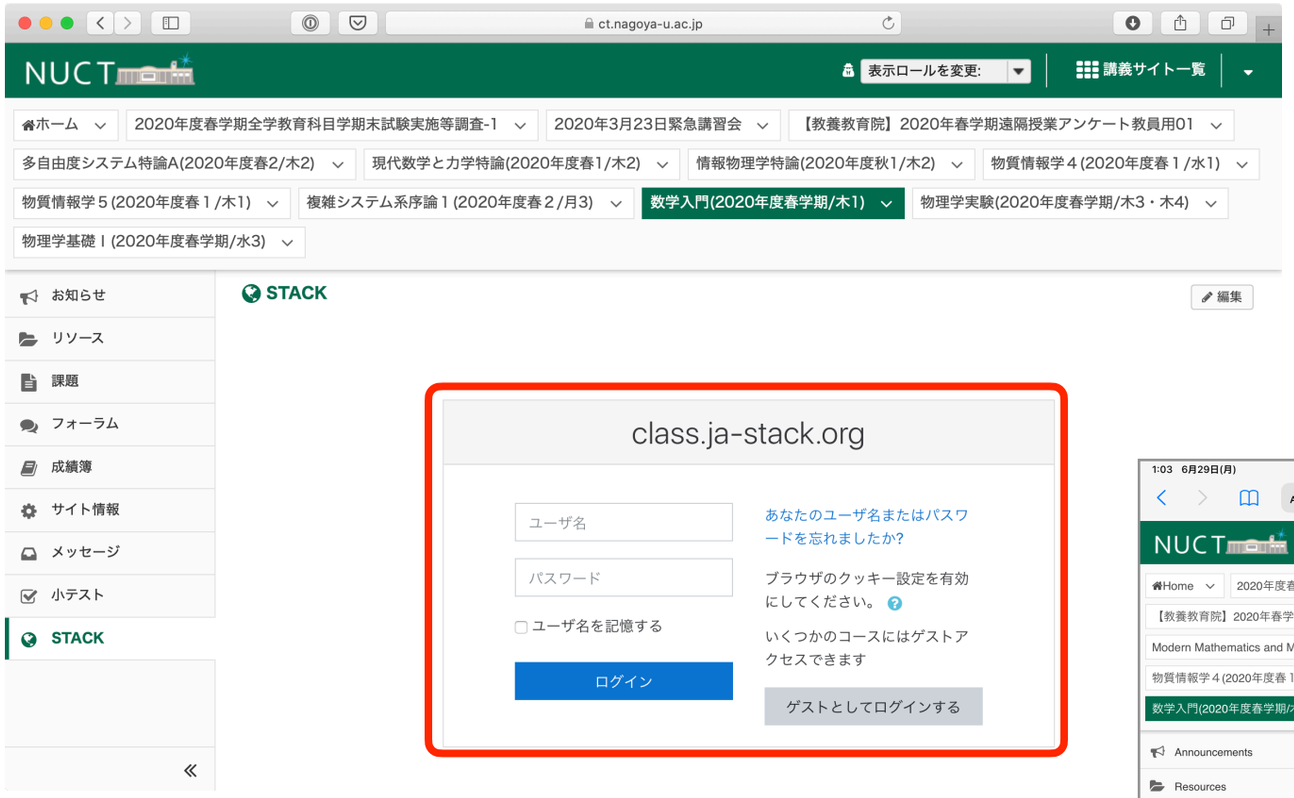
$$=t+C$$

$$=\boxed{\tan\frac{x}{2}+C}$$

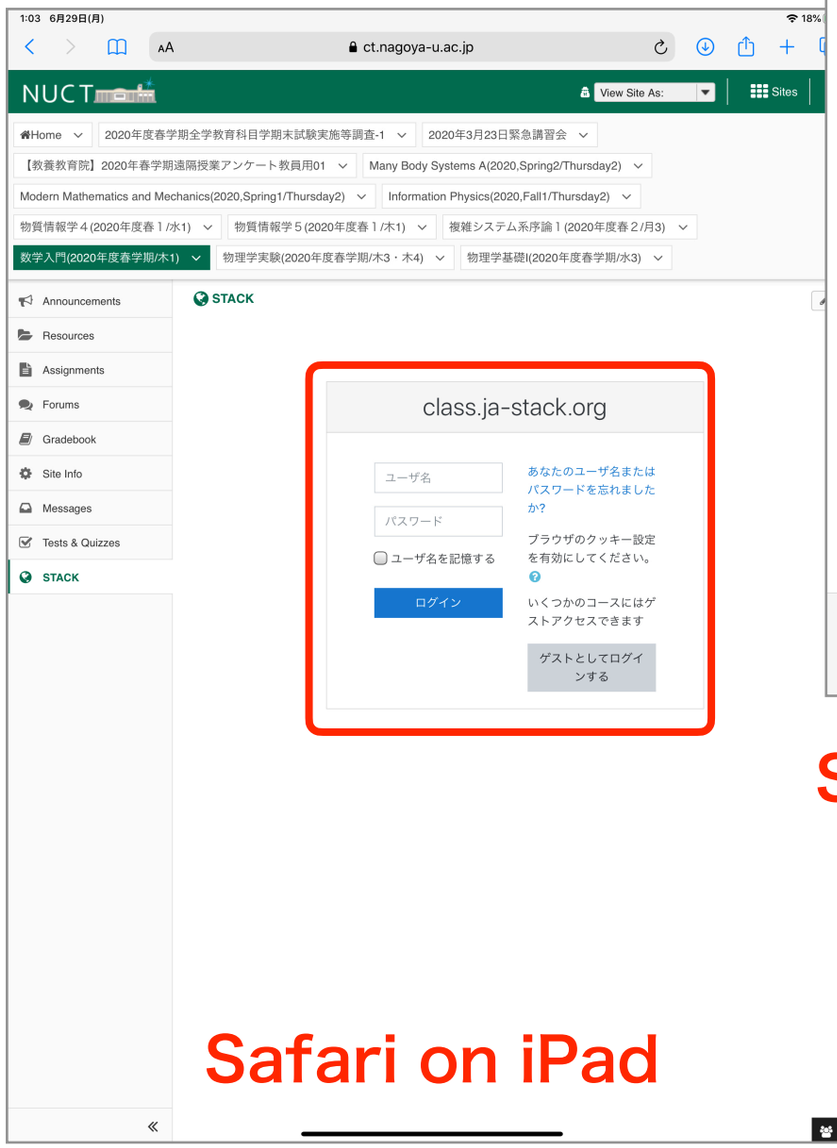
よくできました。正解です!

Some difficulties

Can not access to STACK from Sakai on several environments



Safari on macOS



Safari on iPad

Safari on iPhone

Summary of accessibility to STACK from several devices and browsers

	OK	NG
Mac (10.15.4)	Chrome, Firefox	Safari
Windows 10 (1903)	Edge, IE, Chrome, Firefox	
iPad (iPadOS 13.5.1)	Chrome	Safari, Firefox
Chromebook	Chrome	
iPhone (iOS 13.5.1)	Chrome	Safari, Firefox
Android (9.0)	Chrome	

Student ID on Sakai and Moodle account mapping table

	A	B	C
1	Student ID	Name	STACK
2	03		-c3c7fe930d02 User
3	10		
4	04		
5	10		-f896baf5cc73 User
6	04		cff0d2cfe980 User
7	04		2ff3c73d130b User
8	03		
9	03		-18be8832b6f3 User
10	03		-c18bfd57ac1e User
11	04		
12	04		
13	03		b2836323d756 User
14	04		-345eb7c1b45c User
15	04		e1075576313a User
16	03		-40ecbeae8bcc User
17	04		
18	04		
19	04		
20	10		-b4fc3903f1be User
21	04		-e3b3358e64b3 User
22	03		-d054b5b7c7d5 User
23	04		-8182baecb49a User
24	03		
25	01		4b7892321719 User
26	02		
27	04		
28	04		-8be80bf7aa23

Summary

- We prepared an environment where students can access to STACK from Sakai that is the official university's LMS
- There are some restriction to access STACK from Sakai; for example, Safari on Apple's device
- There is no student who can not access STACK
- Students are happy to use STACK because of instant feedback
- For grading in the end of semester, results of marking on STACK should be merged to the grade sheet on Sakai by using mapping table between students' ID on Sakai and Moodle account