

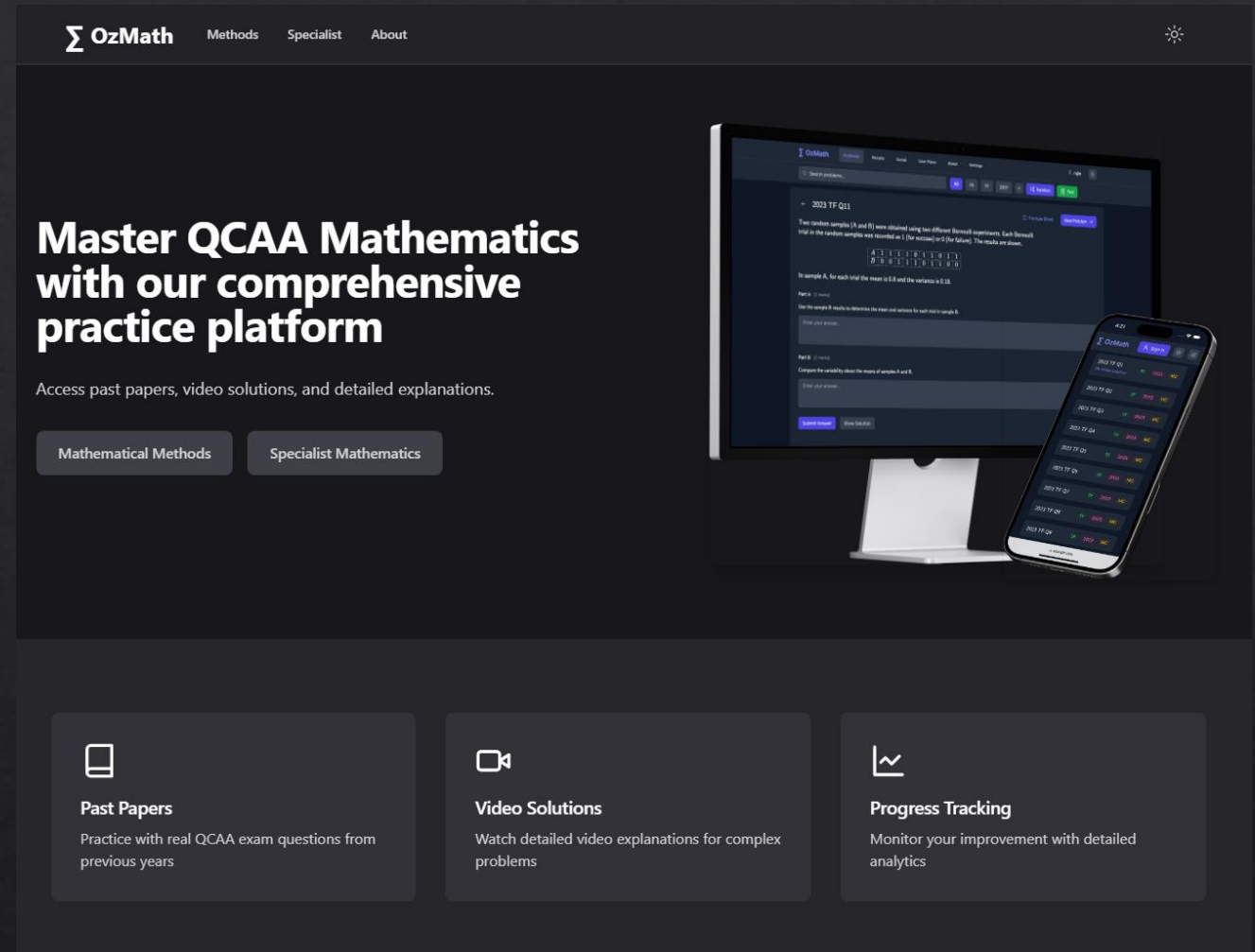
# Technical Project Overview

[ozmath.com](http://ozmath.com)

Benjamin Chau

# Purpose, Aim, Audience

- ❖ Platform for QCAA mathematics students to prepare for exams & solidify content through problem-based learning
- ❖ A way for me to present and build on my two interests – mathematics and full-stack development
- ❖ Platform with potential to expand into assisting IB, VCE & HSC students



*Fig. 1: Home Page, Desktop POV*

# Intuitive, device-compatible UI

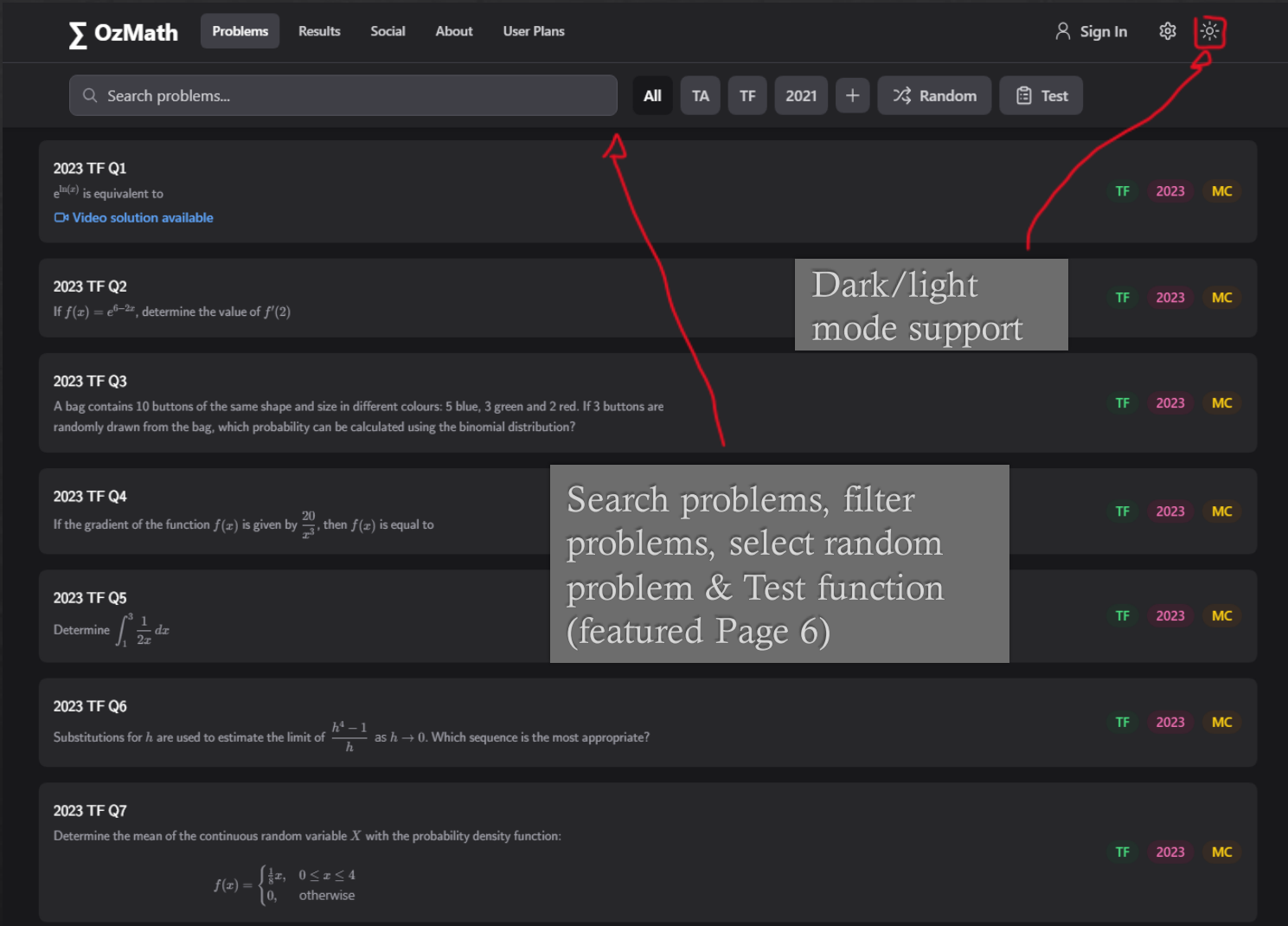


Fig. 2: Methods Home Page, Desktop POV

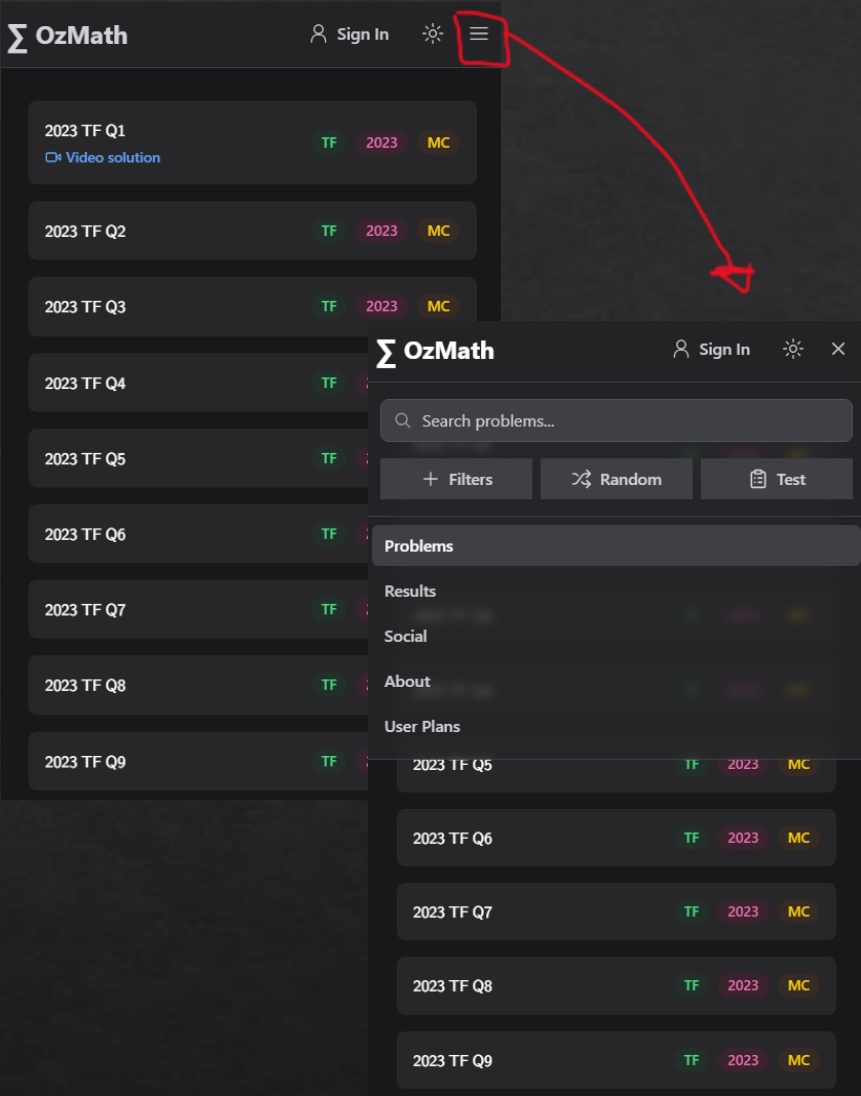


Fig. 3: Methods Home Page + TopBar Dropdown, Mobile POV

# Accurate answering & grading system (1)

OzMath

Problems

Premium Hub

Results

Social

About

User Plans

lieu

Search problems...

All

TA

TF

2021

+

Random

Test

←2023 TA Q18→

A company makes windows using glass that has a mass of 5.6 kg per square metre. A customer orders an unusual window in a partial parabolic shape, as shown.

Not to scale

12 m

7 m

9 m

8 m

Part A [3 marks]

Determine the mass of the window.

Enter your answer...

$x^n$

$\sqrt{\phantom{x}}$

$\pi$

$\theta$

$\int$

$\sum$

$\pm$

$\div$

$\leq$

$\geq$

$\neq$

$\infty$

Submit Answer

Show Solution

Adjustable Slider (DOM integration)

MathQuill integration

Fig. 4: Problem view, Desktop POV

OzMath

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Sign In

Search problems...

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TA

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2021

+

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Submit Answer

Hide Solution

Solution

The correct answer is (C)

Hide Video

QUESTION 1

$e^{\ln(x)}$  is equivalent to

(A) 0

(B) 1

(C)  $x$

(D)  $\frac{1}{x}$

$e^{\ln(x)} = ?$

$\log(a^b) = b \log(a)$

QUESTION 2

$16 \cdot 64^m \cdot 6^{-25}$ , determine the value of  $m/2$

When solving this problem, it's really handy that you know this log law, where

(A)  $e^2$

Fig. 5: Methods Home Page, Mobile POV

# Accurate answering & grading system (2)

OzMath

Problems

Premium Hub

Results

Social

About

User Plans

lieu

Search problems...

All

TA

TF

2021

+

Random

Test

←

2023 TF Q11

Formula Sheet

Next Problem →

Two random samples (A and B) were obtained using two different Bernoulli experiments. Each Bernoulli trial in the random samples was recorded as 1 (for success) or 0 (for failure). The results are shown.

A	1	1	1	1	0	1	1	0	1	1
B	0	0	1	1	1	0	1	1	0	0

In sample A, for each trial the mean is 0.8 and the variance is 0.16.

Solution

Part A

- 1 mark for determining correct mean (0.5)

- 1 mark for determining correct variance (0.25)

Part B

- 1 mark for identifying that sample B has larger variance

- 1 mark for explaining that larger variance indicates larger variability

Part A [2 marks]

Use the sample B results to determine the mean and variance for each trial in sample B.

im pretty sure the mean is 0.5 and the variance is  $\frac{1}{4}$ ?

$x^n$   $\sqrt{\phantom{x}}$   $\pi$   $\theta$   $\int$   $\sum$   $\pm$   $\div$   $\leq$   $\geq$   $\neq$   $\infty$

Part B [2 marks]

Compare the variability about the means of samples A and B.

Enter your answer...

$x^n$   $\sqrt{\phantom{x}}$   $\pi$   $\theta$   $\int$   $\sum$   $\pm$

Submitted

Hide Sol

Score: 2/4

Fig. 6: Problem view, Desktop POV

OzMath

Problems

Premium Hub

Results

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User Plans

qroah

Limited API requests – mitigating spam & misuse

Premium Subscription Status

Status: Cancelling

Access until: January 28, 2026

User Plans

Choose the plan that best fits your needs

No Account

\$0/forever

✓ Basic problem access

✓ 0 requests/hour

✓ No progress tracking

✓ No social features

Free Account

\$0/forever

✓ Basic problem access

✓ 50 requests/day

✓ Track test history

✓ Connect with friends

✓ View friends' progress

OzPremium Account

\$10/year

✓ Everything in Free Account, plus:

✓ 300 requests/day

✓ Access to exclusive Premium Hub tab

✓ Access to full non-QCAA problem database

✓ Crown icon + extra themes

Cancel Premium

Fig. 7: User Plans Page, Tablet POV

# Testing system (1)

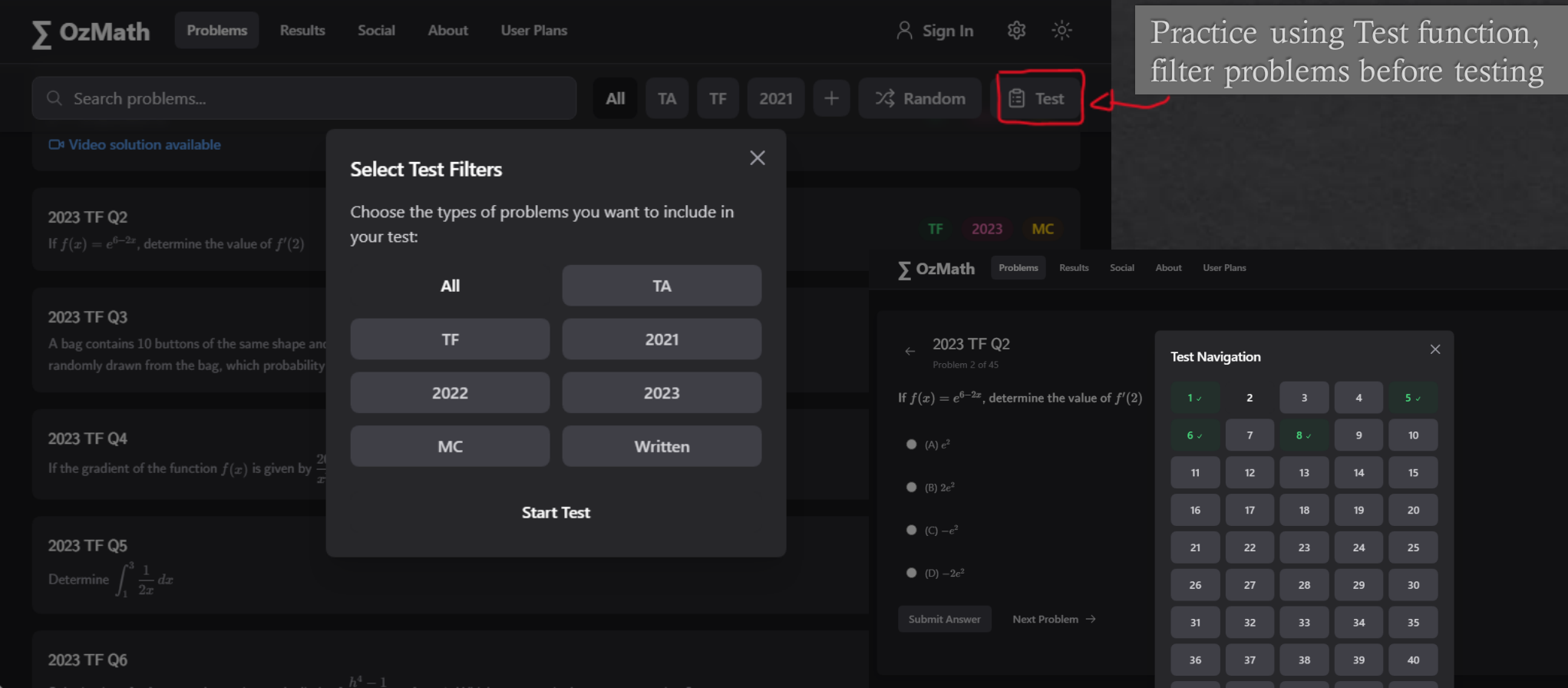


Fig. 8: Test Modal, Tablet POV

Navigate problems during test

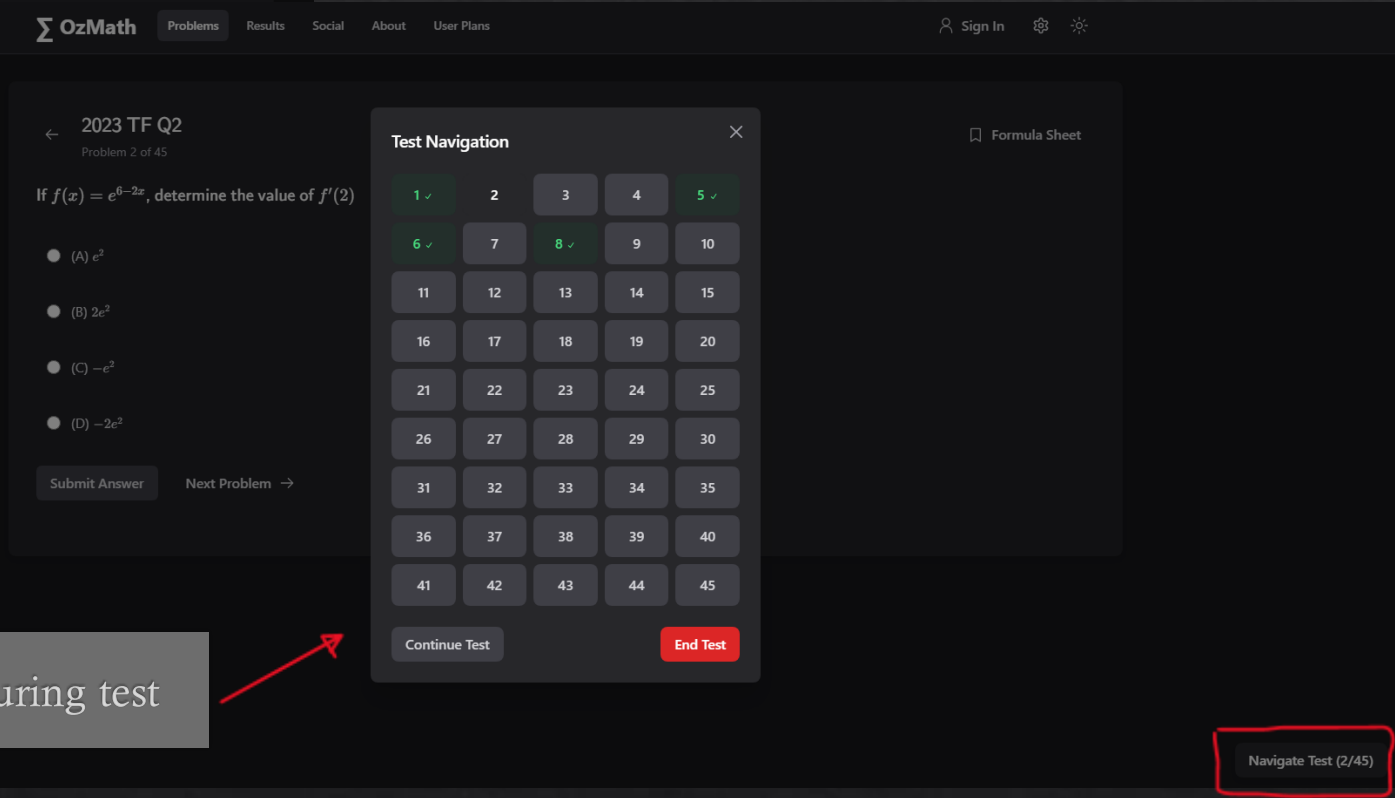


Fig. 9: Test Navigation Modal, Desktop POV



# Testing system (2)

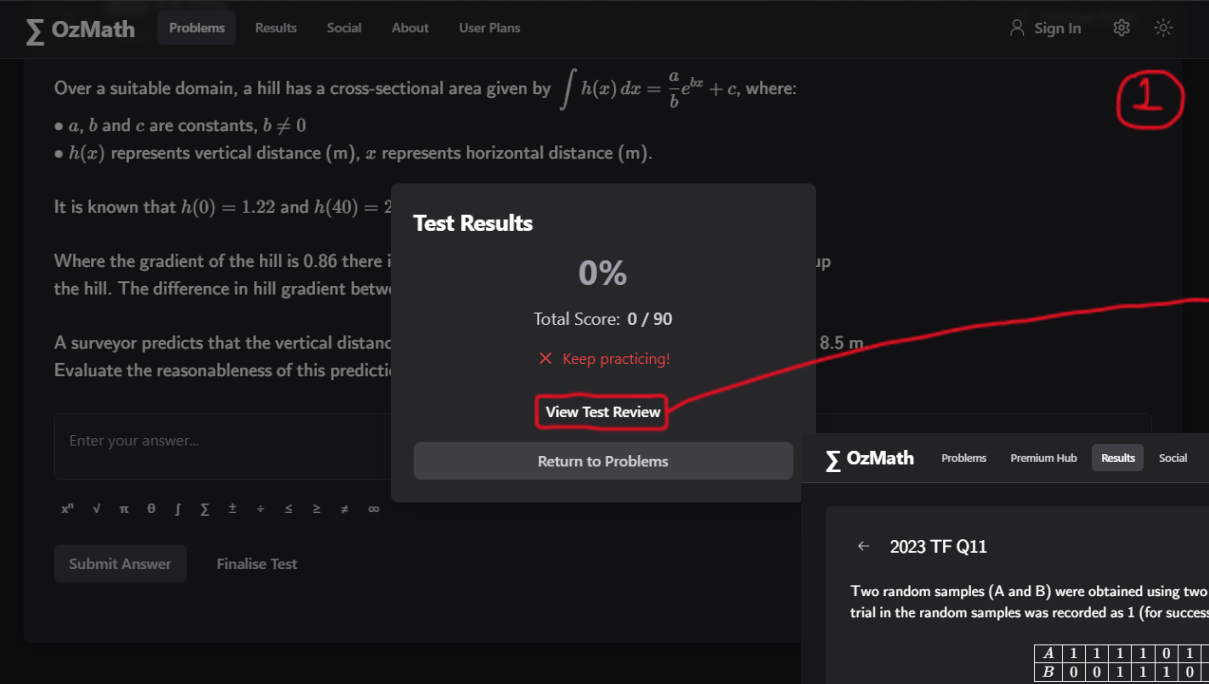


Fig. 10: Test Results Modal, Desktop POV

View results, review test see awarded marks & part marks

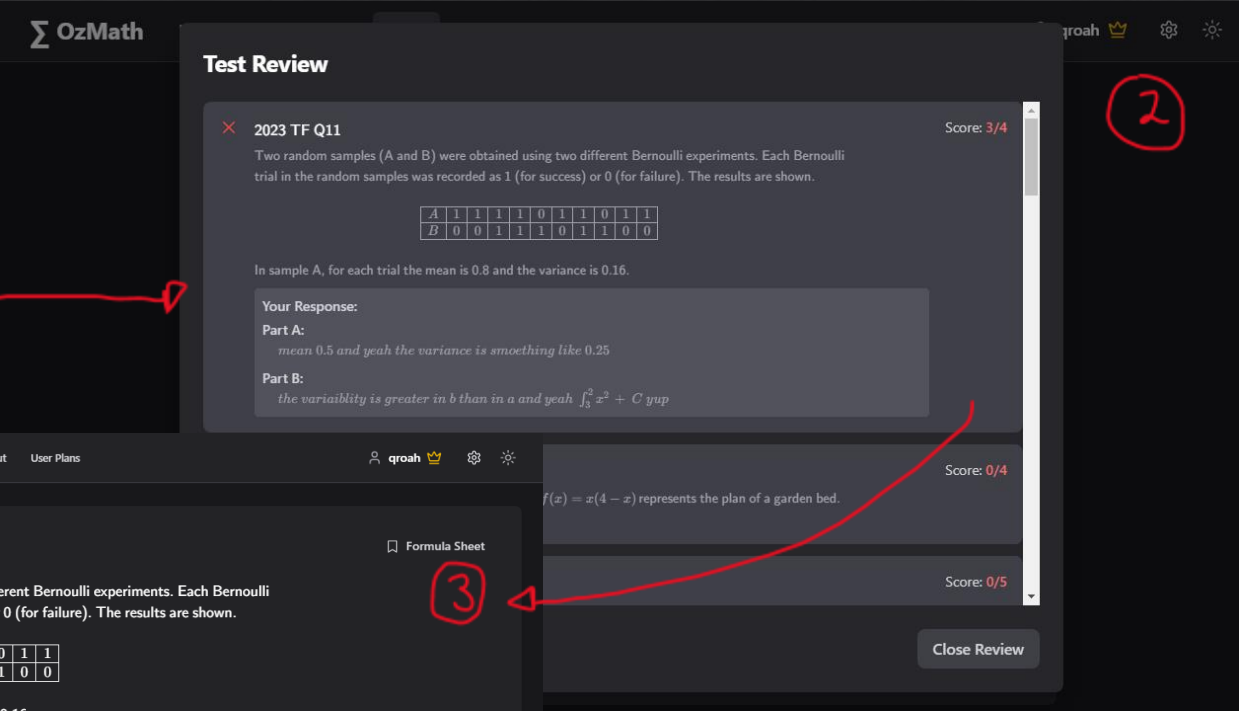


Fig. 11: Test Review Modal, Desktop POV

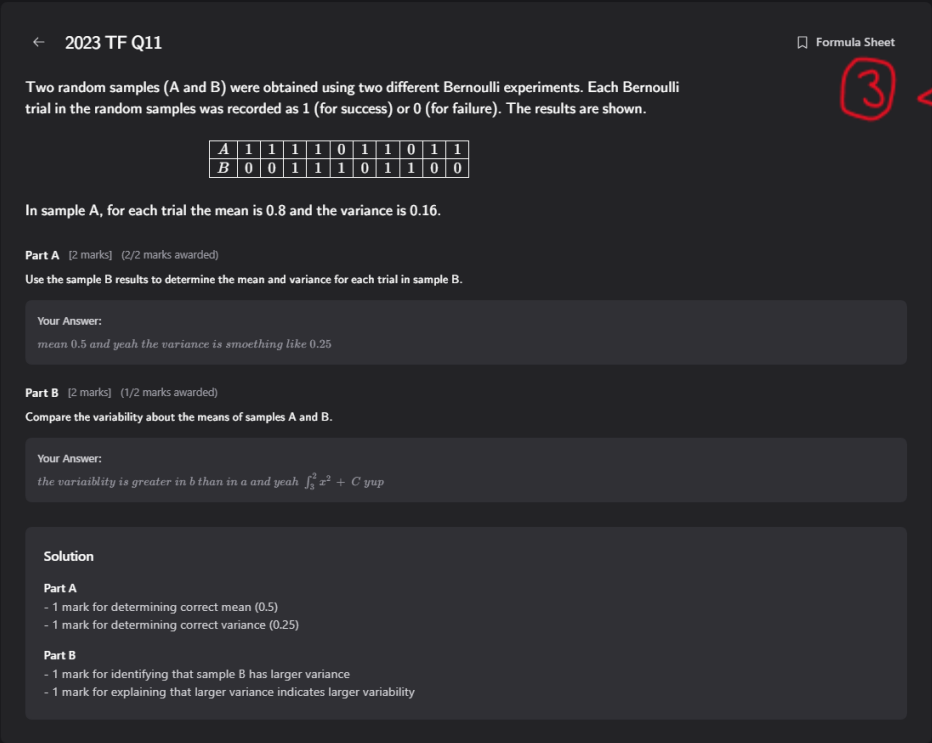


Fig. 12: Problem Review, Desktop POV

# Testing system (3)

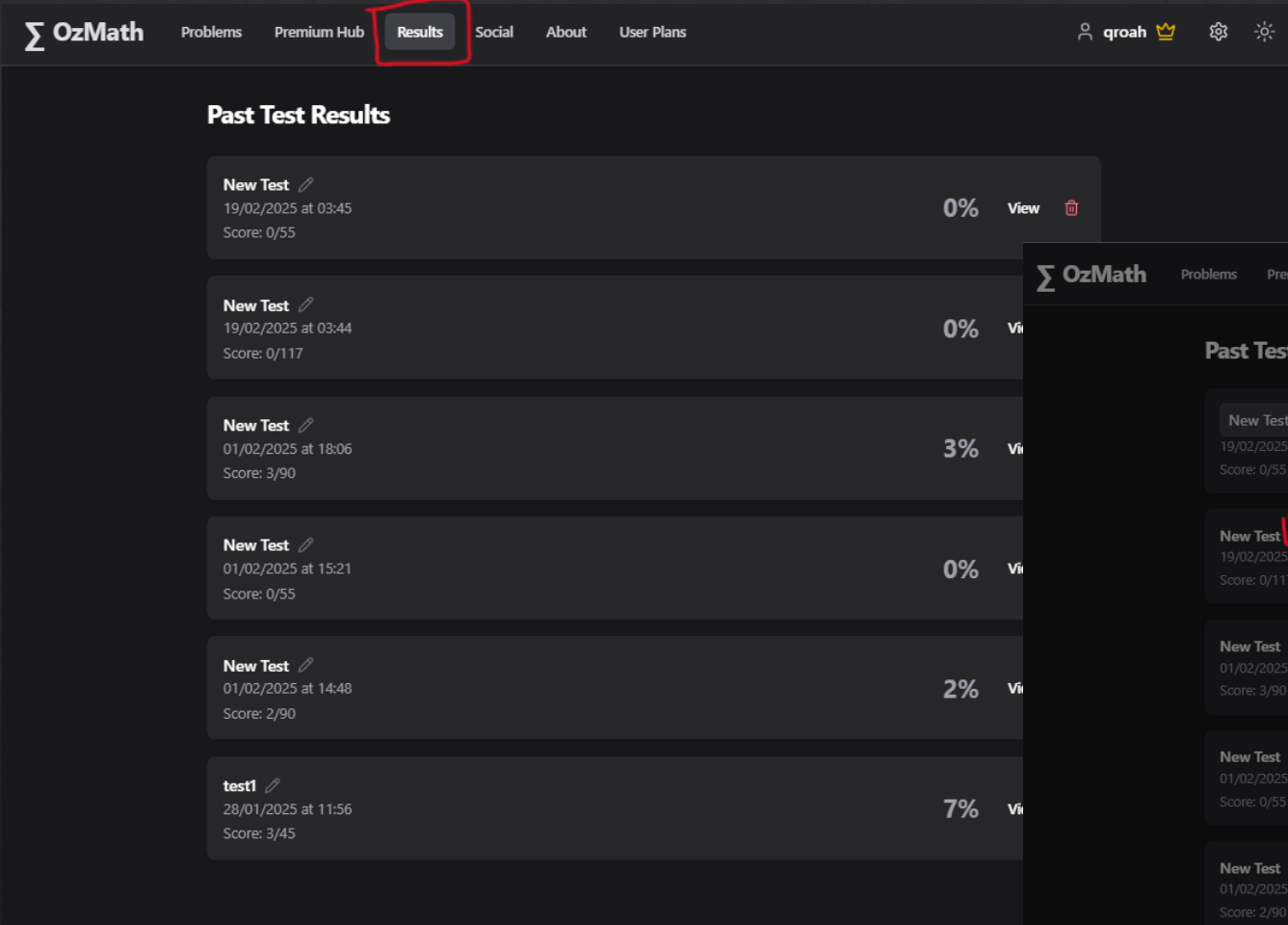
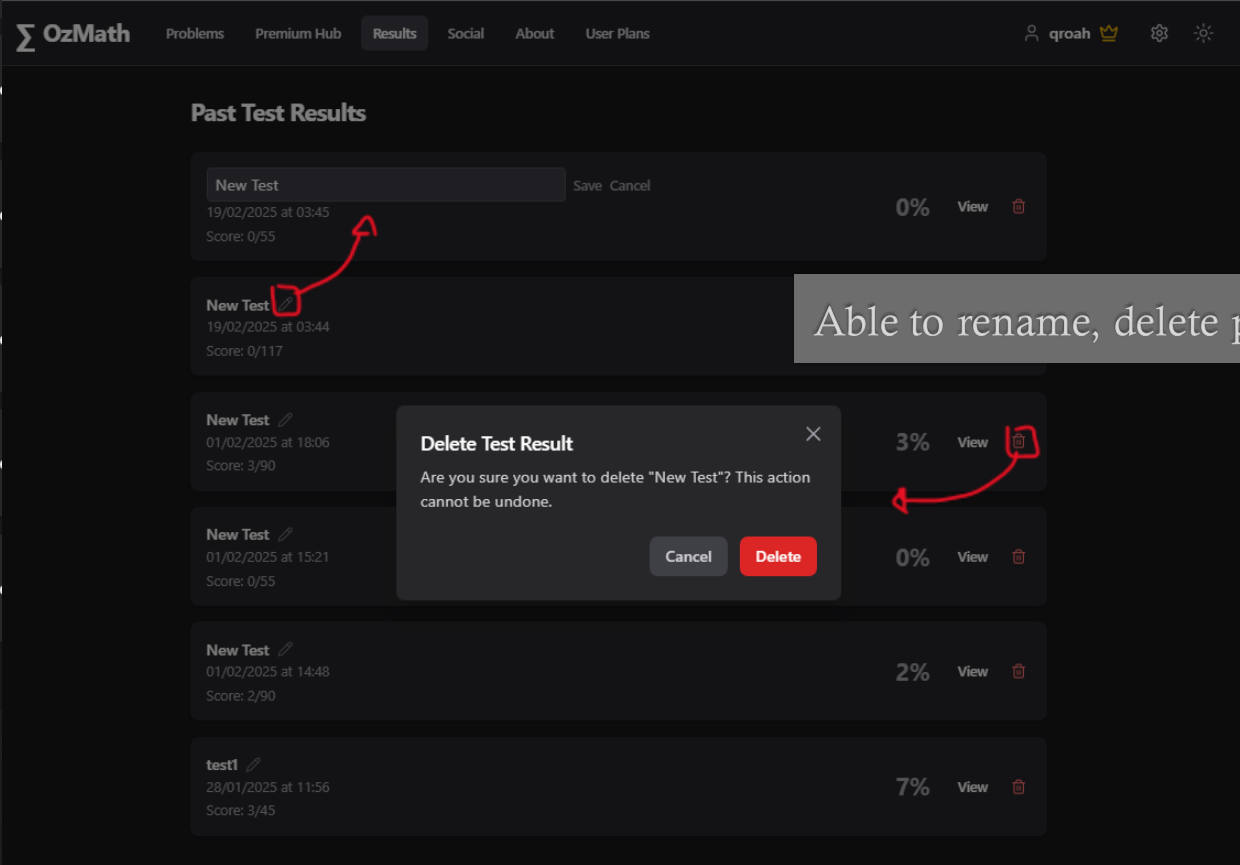


Fig. 13: Results Page, Tablet POV

If a test is finalised by a registered user, tests can be reviewed again at any time in results tab

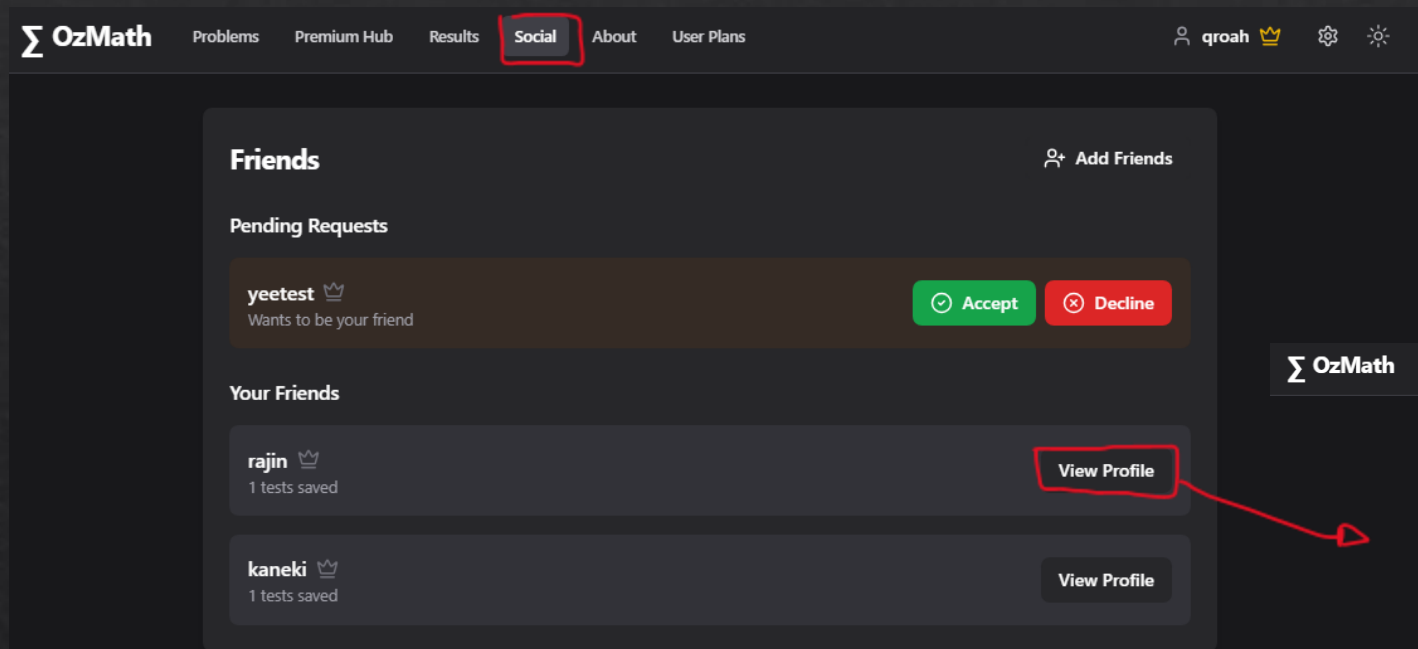


Able to rename, delete past tests

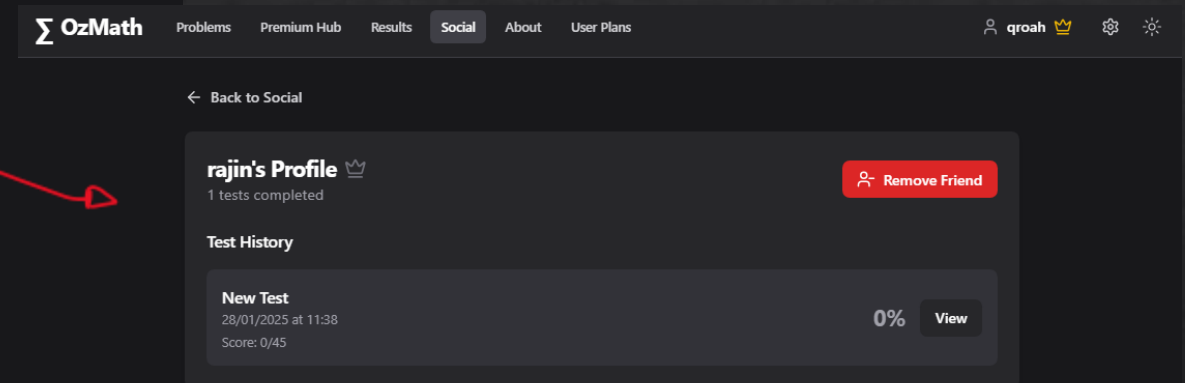
Fig. 14: Results Page, Tablet POV



# User & Social System



Registered users can add friends as well as view all their saved test results & answers

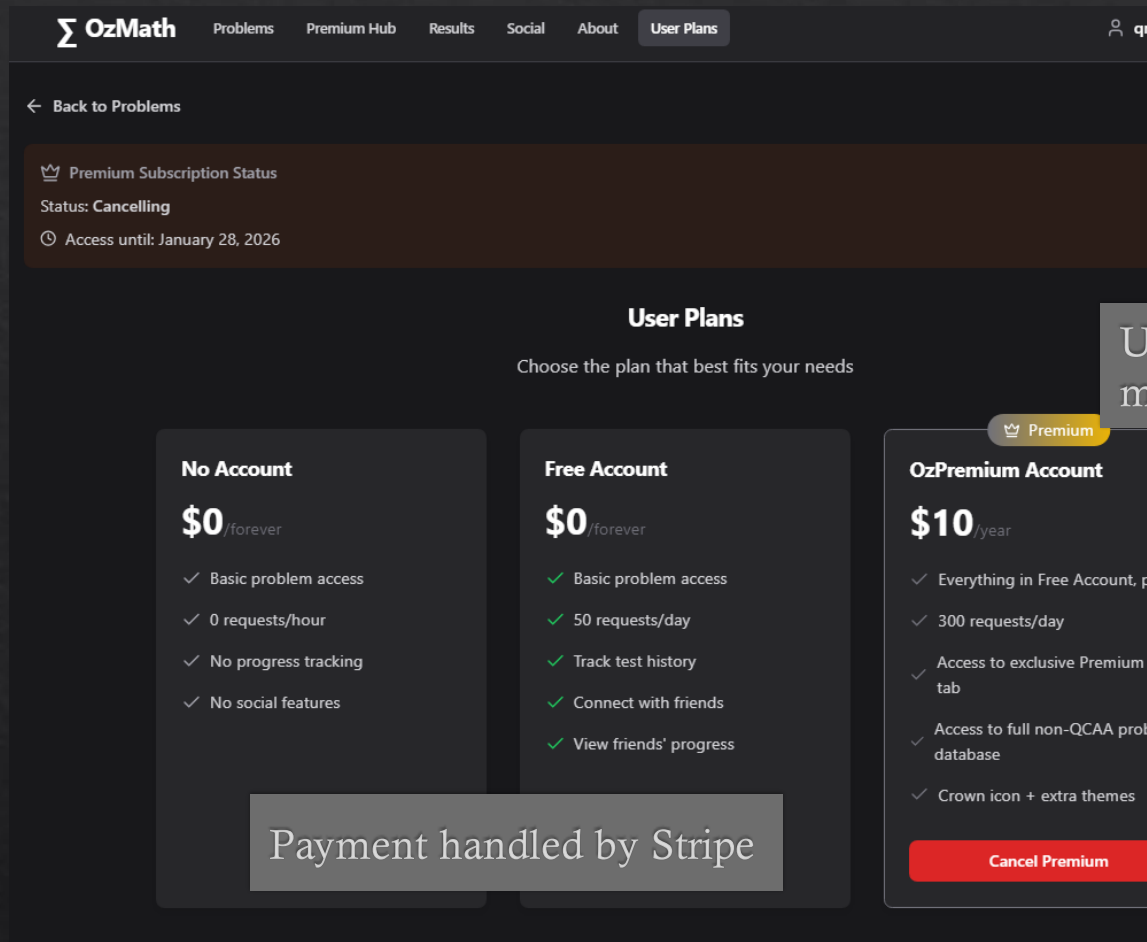


Database handling via Supabase in PostgreSQL

Fig. 15, Social Page, Desktop POV

Fig. 16: Social Profile View, Desktop POV

## Premium Users & Features



*Fig. 17: User Plans Page, Desktop POV*

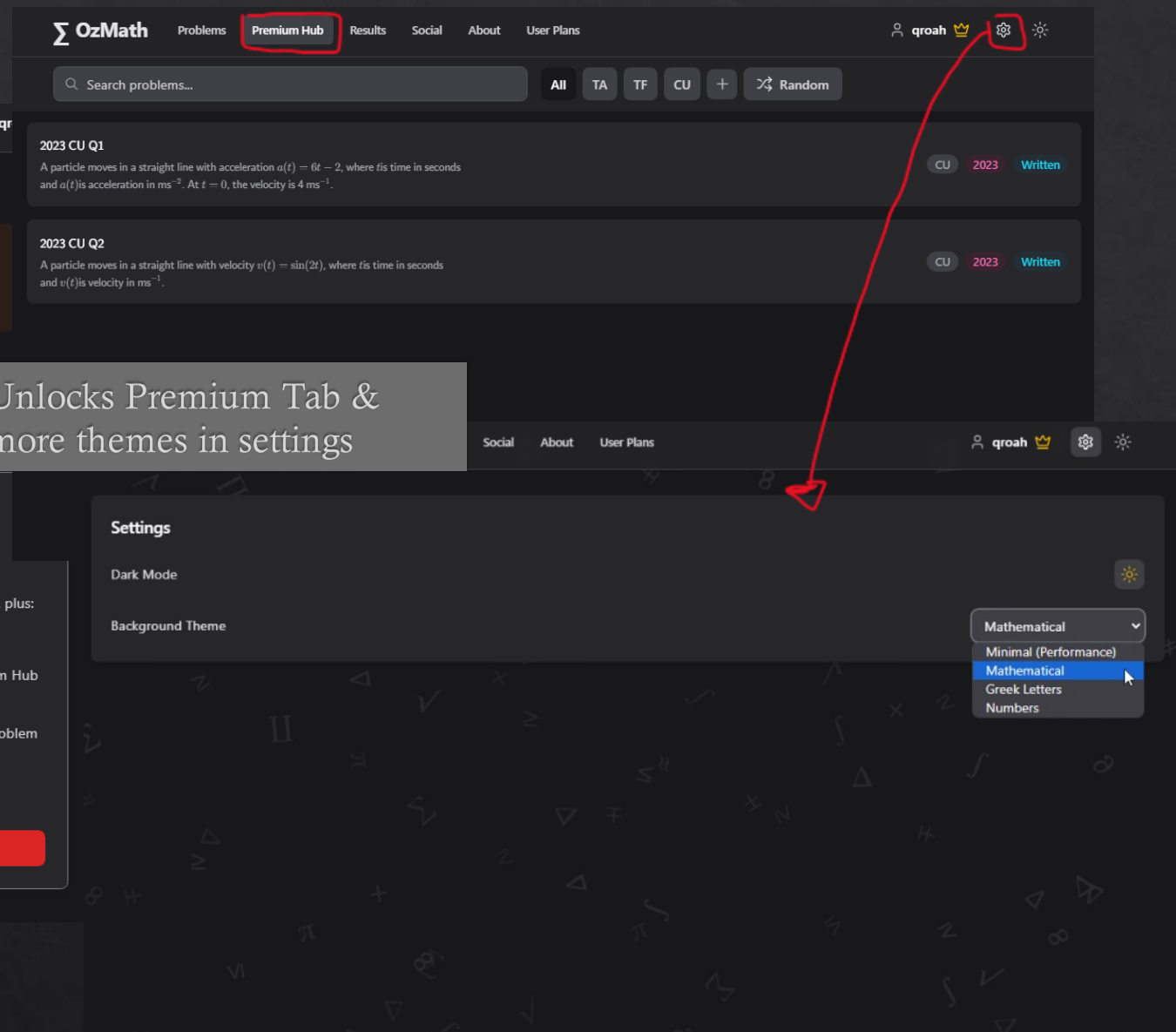


Fig. 18: Premium Hub + Settings Pages, Desktop POV

I originally began building OzMath in an effort to familiarise myself with new skills in web and full-stack development. However, as the project evolved with each new iteration, I found myself increasingly passionate and excited about its potential. This drive is explanatory of OzMath's rapid development, and I've learnt a lot about entrepreneurial and development/revenue operations as a result.

I'm still working on OzMath and brainstorming new ideas every day, with plans to extend to other states, subjects and programs across Australia.

### Stack/Languages/Technologies:

Typescript, React, MUX Video, Supabase, PostgreSQL, LaTeX, Tailwind CSS, HTML, Stackblitz, ESLint, GitHub Copilot, ChatGPT API, Radix/ui, Stripe, MathQuill, Netlify (deployment), Squarespace (domain host)

### Inspirations:

Shadcn/ui (website layout, design, colour theme), MathMaster (mockups, layout), Leetcode (learning system, design), Math Videos Australia Joel Speranza (inspiration)

GitHub: @chaubenn

Website: [ozmath.com](https://ozmath.com)