THE UNIVERSITY OF AKRON
Mathematics and Computer Science

Web and Exerquiz Packages
Test File

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Содержание

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Оглавление

1. Введение

Это - пробный файл шаблонов окружений, определенных в `exerquiz`.

2. Интерактивные упражнения

Талантливо задуманная последовательность упражнений может помочь студенту. Окружение `exercise` облегчает изготовление электронных упражнений. Используя опцию `forpaper`, Вы также можете сделать бумажную копию Ваших упражнений. См. справочное руководство `Webeqman.pdf`.

УПРАЖНЕНИЕ 1. Вычислить интеграл $\int x^2 e^{2x}\,dx$.

В преамбуле этого документа мы определили окружение `problem` со своим собственным счетчиком. Вот его пример.

Задача 2.1. Является ли $F(t) = \sin(t)$ первообразной $f(x) = \cos(x)$? Поясните свой вывод.

Модифицируя окружение **exercise**, Вы можете также создать окружение **example**. В преамбуле этого документа оно определено без сопутствующего счетчика.

Пример. Приведите пример *открыто-замкнутого* множества.

Решение: Вещественная ось одновременно открыта и замкнута в топологии вещественной оси.

□

Существует *****-разновидность окружения **exercise**, Ее использование сигнализирует о присутствии нескольких частичных вопросов упражнения. Следующие упражнения иллюстрируют опцию.

УПРАЖНЕНИЕ 2. Suppose a particle is moving along the s-axis, and that its position at any time t is given by $s = t^2 - 5t + 1$.

(a) Find the velocity, v, of the particle at any time t.

(b) Find the acceleration, a, of the particle at any time t.

References can be made to a particular part of an exercise; for example, “see Exercise 2(a).” Part (a) is in blue; the solutions for that part is “hidden”. This is a new option for the `exercise` environment.

There is now an option for listing multipart question in tabular form. This problem style does not obey the `solutionsafter` option.

Упражнение 3. Simplify each of the following expressions in the complex number system. *Note*: $\bar{z}$ is the conjugate of z; $\operatorname{Re} z$ is the real part of z and $\operatorname{Im} z$ is the imaginary part of z.

(a) i^2 (b) i^3

(c) $z + \bar{z}$ (d) $1/z$

3. Короткие тесты с ответами и без ответов

Below is a `shortquiz` without solution.

Вопрос Was it in Xanadu did Kubla Kahn a stately pleasure dome decree?

(a) True (b) False

Below is a `shortquiz` with a solution. Вопрос In what year did Colum-

bus sail the ocean blue?

(a) 1490 (b) 1491 (c) 1492 (d) 1493

These two types can be bundled together using the `questions` environment.

Вопрос Answer each of the following. Passing is 100%.

1. Was it in Xanadu did Kubla Kahn a stately pleasure dome decree?
   (a) True (b) False
2. In what year did Columbus sail the ocean blue?
   (a) 1490 (b) 1491 (c) 1492 (d) 1493

Try using the `proofing` option of exerquiz. In this case, the correct answer is indicated to the side; useful, perhaps, for proof-reading the document

4. Подводящие итог тесты на основе Javascript

You can create graded quizzes using the `quiz` environment.

Here is a graded quiz using simple links. Might be suitable for a limited number of questions.

СТАРТ! Using the discriminant, $b^2 - 4ac$, respond to each of the following questions.

1. Is the quadratic polynomial $x^2 - 4x + 3$ irreducible?
(a) Yes (b) No

2. Is the quadratic polynomial $2x^2 - 4x + 3$ irreducible?
(a) Yes (b) No

3. How many solutions does the equation $2x^2 - 3x - 2 = 0$ have?
(a) none (b) one (c) two

ИТОГО:

?

By using the `*`-option, you can create a multiple choice set of question using check boxes.

СТАРТ! Using the discriminant, $b^2 - 4ac$, respond to each of the following questions.

1. Is the quadratic polynomial $x^2 - 4x + 3$ irreducible?
☐ Yes ☐ No

2. Is the quadratic polynomial $2x^2 - 4x + 3$ irreducible?
☐ Yes ☐ No

3. How many solutions does the equation $2x^2 - 3x - 2 = 0$ have?
☐ none ☐ one ☐ two

ИТОГО: ?

The `proofing` option of `exerquiz` can be used to mark the correct answer to the side; useful, perhaps, for proof-reading the document

5. Исправляющие тесты на основе Javascript

Beginning with version 1.2 of exerquiz, you can now grade the quizzes created by the `quiz` environment. In this section, we illustrate the `quiz` environment with corrections.

There are two types: link-style and form-style. This is the link-style format:

СТАРТ! Answer each of the following. Passing is 100%.

1. Who created TEX?
(a) Knuth (b) Lamport (c) Carlisle (d) Rahtz

2. Who originally wrote LATEX?
(a) Knuth (b) Lamport (c) Carlisle (d) Rahtz

ИТОГО:

? КОРРЕКТОР

We can obtain the forms-style quiz simply by inserting an * before the quiz field name. Important! Be sure to name each quiz field differently!

СТАРТ! Answer each of the following. Passing is 100%.

1. Who created TEX?

☐ Knuth ☐ Lamport ☐ Carlisle ☐ Rahtz

2. Who originally wrote LATEX?

☐ Knuth ☐ Lamport ☐ Carlisle ☐ Rahtz

ИТОГО: ? КОРРЕКТОР

The “corrections” button can be modified to suite your needs. The quiz below queries your knowledge of the people who maintain various freeware TEX Systems for UNIX and Win95/98/NT. The corrections button has been modified to take on a different look.

СТАРТ! Answer each of the following. Passing is 100%.

1. What TEX System does Thomas Esser maintain?

☐ MikTEX ☐ csTEX ☐ teTEX ☐ fpTEX

2. What TEX System does Fabrice Popineau maintain?

☐ MikTEX ☐ csTEX ☐ teTEX ☐ fpTEX

3. What TEX System does Christian Schenk maintain?

☐ MikTEX ☐ csTEX ☐ teTEX ☐ fpTEX

ИТОГО: ? TeX

Решения упражнений

К упражнению 1. Мы используем `интегрирование по частям`:

$$\int x^2 e^{2x}\,dx = \tfrac{1}{2}x^2e^{2x} - \int xe^{2x}\,dx \qquad u = x^2,\ dv = e^{2x}\,dx$$

$$= \tfrac{1}{2}x^2e^{2x} - \left[\tfrac{1}{2}xe^{2x} - \int \tfrac{1}{2}e^{2x}\,dx\right] \qquad \text{интегрирование по частям}$$

$$= \tfrac{1}{2}x^2e^{2x} - \tfrac{1}{2}xe^{2x} + \tfrac{1}{2}\int e^{2x}\,dx \qquad u = x^2,\ dv = e^{2x}\,dx$$

$$= \tfrac{1}{2}x^2e^{2x} - \tfrac{1}{2}xe^{2x} + \tfrac{1}{4}e^{2x} \qquad \text{интегрирование по частям}$$

$$= \tfrac{1}{4}(2x^2 - 2x + 1)e^{2x} \qquad \text{Просто!}$$

К упражнению 1

Упражнение 2.1. Ответ — да. Определение утверждает, что F есть первообразная функции f если $F'(x) = f(x)$. Заметим, что

$$F(t) = \sin(t) \implies F'(t) = \cos(t)$$

Таким образом, $F(x) = \cos(x) = f(x)$. ◀

К упражнению 2(b) Acceleration is the rate of change of velocity with respect to time. Thus,

$$a = \frac{dv}{dt}$$

For our problem, we have

$$a = \frac{dv}{dt} = \frac{d}{dt}(2t - 5) = 2.$$

The acceleration at time t is constant: $\boxed{a = 2}$. □

К упражнению 3(а) $i^2 = -1$ □

К упражнению 3(b) $i^3 = ii^2 = -i$ □

К упражнению 3(c) $z + \bar{z} = \operatorname{Re} z$ □

Ответы к тестам

Ответ:

In 1492,
Columbus sailed the ocean blue.

Profound was the logic in his quest,
to get to the east, he headed west.[1]

К формулировке вопроса

[1] This poem was obtained by personal communication from Leonard A. Stefanski, Department of Statistics, North Carolina State University.

Ответ:

In 1492,
Columbus sailed the ocean blue.

Profound was the logic in his quest,
to get to the east, he headed west.[2]

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[2]This poem was obtained by personal communication from Leonard A. Stefanski, Department of Statistics, North Carolina State University.