

THE UNIVERSITY OF AKRON
Mathematics and Computer Science

Web and Exerquiz Packages
Test File

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Legend: In **Section 5**, a ✓ indicates that the student gave the correct response; a ✗, indicates an incorrect response, in this case, the correct answer is marked with a ●.

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1. Introduction

This is a sample file to give templates of the environments defined in `exerquiz`.

2. On-Line Exercises

A well-designed sequences of exercises can be of aid to the student. The `exercise` environment makes it easy to produce electronic exercises. By using the `forpaper` option, you can also make a paper version of your exercises. See the `Webeqman.pdf` reference manual.

EJERCICIO 1. Evaluate the integral $\int x^2 e^{2x} dx$.

In the preamble of this document, we defined a `problem` environment with its own counter. Here is an example of it.

Problem 2.1. Is $F(t) = \sin(t)$ an antiderivative of $f(x) = \cos(x)$? Explain your reasoning.

Problem 2.2. Is $F(t) = \sin(t)$ an antiderivative of $f(x) = \cos(x)$? Explain your reasoning.

By modifying the `exercise` environment, you can also create an `example` environment. The one defined in the preamble of this document has no associated counter.

Example. Give an example of a set that is *clopen*.

Solución: The real number line is both closed and open in the usual topology of the real line.

□

There is a `*`-option with the `exercise` environment, using it signals the presence of a multiple part exercise question. The following exercise illustrates this option.

EJERCICIO 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.

EJERCICIO 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. Short Quizzes with or without Solutions

Below is a `shortquiz` without solution.

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

- (a) True
- (b) False

Below is a `shortquiz` with a solution.

Test. In what year did Columbus sail the ocean blue?

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

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

Test. 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. Graded Quizzes with 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.

Inicio del Test 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

Final del Test

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

Inicio del Test 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

Final del Test

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

5. Correcting Quizzes with 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:

Inicio del Test Answer each of the following. Passing is 100%.

1. Who created $\text{T}_{\text{E}}\text{X}$?
 - (a) Knuth
 - (b) Lamport
 - (c) Carlisle
 - (d) Rahtz

2. Who originally wrote \LaTeX ?

- (a) Knuth (b) Lamport (c) Carlisle (d) Rahtz

Final del Test

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!

Inicio del Test 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

Final del Test

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.

Inicio del Test Answer each of the following. Passing is 100%.

1. What \TeX System does Thomas Esser maintain?

- Mik \TeX cs \TeX te \TeX fp \TeX

2. What T_EX System does Fabrice Popineau maintain?

MikT_EXcsT_EXteT_EXfpT_EX

3. What T_EX System does Christian Schenk maintain?

MikT_EXcsT_EXteT_EXfpT_EX

Final del Test

6. Objective-Style Questions

Beginning with version 2 of Exerquiz, it is possible to pose objective-style questions (fill-in-the-blank). The demo file for this style question is called [jqiztst.pdf](#) (relative link: [jqiztst.pdf](#)). Click on the link to review this demo file.

Soluciones a los Ejercicios


Ejercicio 1. We evaluate by integration by parts:

$$\begin{aligned}\int x^2 e^{2x} dx &= \frac{1}{2} x^2 e^{2x} - \int x e^{2x} dx && u = x^2, dv = e^{2x} dx \\ &= \frac{1}{2} x^2 e^{2x} - \left[\frac{1}{2} x e^{2x} - \int \frac{1}{2} e^{2x} dx \right] && \text{integration by parts} \\ &= \frac{1}{2} x^2 e^{2x} - \frac{1}{2} x e^{2x} + \frac{1}{2} \int e^{2x} dx && u = x^2, dv = e^{2x} dx \\ &= \frac{1}{2} x^2 e^{2x} - \frac{1}{2} x e^{2x} + \frac{1}{4} e^{2x} && \text{integration by parts} \\ &= \frac{1}{4} (2x^2 - 2x + 1) e^{2x} && \text{simplify!}\end{aligned}$$

Ejercicio 1


Problem 2.1. The answer is yes. The definition states that F is an antiderivative of f if $F'(x) = f(x)$. Note that

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

hence, $F(x) = \cos(x) = f(x)$. 

Problem 2.2. The answer is yes. The definition states that F is an antiderivative of f if $F'(x) = f(x)$. Note that

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

hence, $F(x) = \cos(x) = f(x)$. 

Ejercicio 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: $\boxed{a = 2}$.



Ejercicio 3(a) $i^2 = -1$



Ejercicio 3(b) $i^3 = ii^2 = -i$



Ejercicio 3(c) $z + \bar{z} = \operatorname{Re} z$



Soluciones a los Tests

Solución al Test:

In 1492,
Columbus sailed the ocean blue.
Profound was the logic in his quest,
to get to the east, he headed west.¹

Final del Test

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

Solución al Test:

In 1492,
Columbus sailed the ocean blue.
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