BONUS Quiz 4

Name: ____________________________
Date: ____________________________
Time Begun: _______________________
Time Ended: _______________________

Topic: Euler’s Method and Differential Equations

The idea behind this quiz is to assess your understanding of Euler’s Method and Differential Equations.

Reality Check:

EXPECTED SCORE : __________/10  ACTUAL SCORE : __________/10

Instructions:

0. Before you open the quiz, look at the hint at http://faculty.oxy.edu/ron/math/110/07

1. Once you open the quiz, you have 60 minutes to complete it.

2. You may not use your text or any other source, including course materials. You may use a calculator. You must work alone. Do not discuss the contents of this quiz with anyone.

3. If you use your own paper, please staple it to the quiz before coming to class. If you don’t have a stapler, buy or borrow one. UNSTAPLED PAPERS WILL NOT BE GRADED.

4. After completing the quiz, sign the pledge below stating on your honor that you have adhered to these rules.

5. Your solutions must have enough details such that an impartial observer can read your work and determine HOW you came up with your solution.

6. This bonus quiz is due on Monday, December 3, at the beginning of class. NO LATE QUIZZES WILL BE ACCEPTED.

Pledge: I, ____________________________, pledge my honor as a human being and Occidental student, that I have followed all the rules above to the letter and in spirit.
Consider the initial value problem (IVP) below

\[ C'(t) = 2t \cdot (C(t))^2 \]
\[ C(1) = -1. \]

(a) (6 points) Use Euler’s method with a time step of \( \Delta t = \frac{1}{2} \) to fill in the table below.

<table>
<thead>
<tr>
<th>( t )</th>
<th>( C(t) )</th>
<th>( \Delta t )</th>
<th>( C'(t) )</th>
<th>( \Delta C )</th>
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(b) (2 points) Consider the function \( C(t) = -t^{-2} \). Is this the solution to the given initial value problem?

(c) (2 points) Determine whether the approximation computed in part (a) for \( C(2) \) is an over-estimate or under-estimate.