Name:	Roll Number:

## Quiz 04 (Set C)

SIAS, Krea University (AY 2025-26) Mathematical Methods for Economics (Course Code: ECON211) 12 September 2025

Maximum Points: 10 Duration: 30 minutes

## Instructions and Advice:

- This is a closed book quiz.
- This quiz accounts for 10% of your grades.
- You need to answer 8 questions in all.
- All questions are compulsory. Points for each question are mentioned in parentheses.
- Please select only one choice for the multiple choice questions.
- At no point during the exam, you are allowed to ask clarificatory questions. Make reasonable assumptions if you have doubts and proceed to answer the question.
- You are not permitted to use any electronic device including calculators.
- There is plenty of time. Use it wisely, do not rush.
- All the best!

## **Multiple Choice Questions**

- 1. (1 point) Let  $f(x) = \ln(3 + e^x)$ . Then, f''(0) is

  - C.  $\frac{1}{2}$

Answer:

2. (1 point) Consider the following statements:

Statement (i):

 $f(x) = e^{x-2}$  is a strictly increasing function.

Statement (ii):

- $g(x) = 2 4x^2$  is a strictly convex function.
  - A. Both (i) and (ii) are correct.
  - B. Statement (i) is correct but statement (ii) is wrong.
  - C. Statement (i) is wrong but statement (ii) is correct.
  - D. Both (i) and (ii) are wrong.

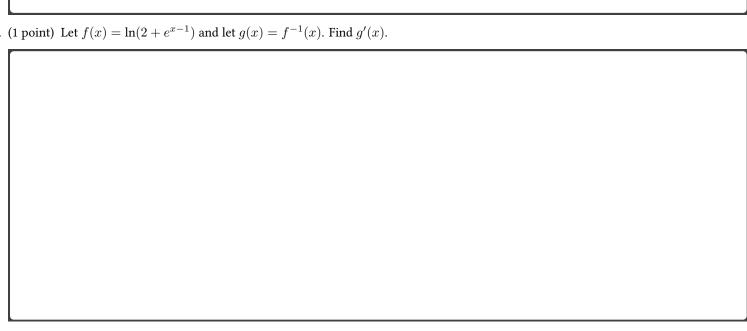
Answer:

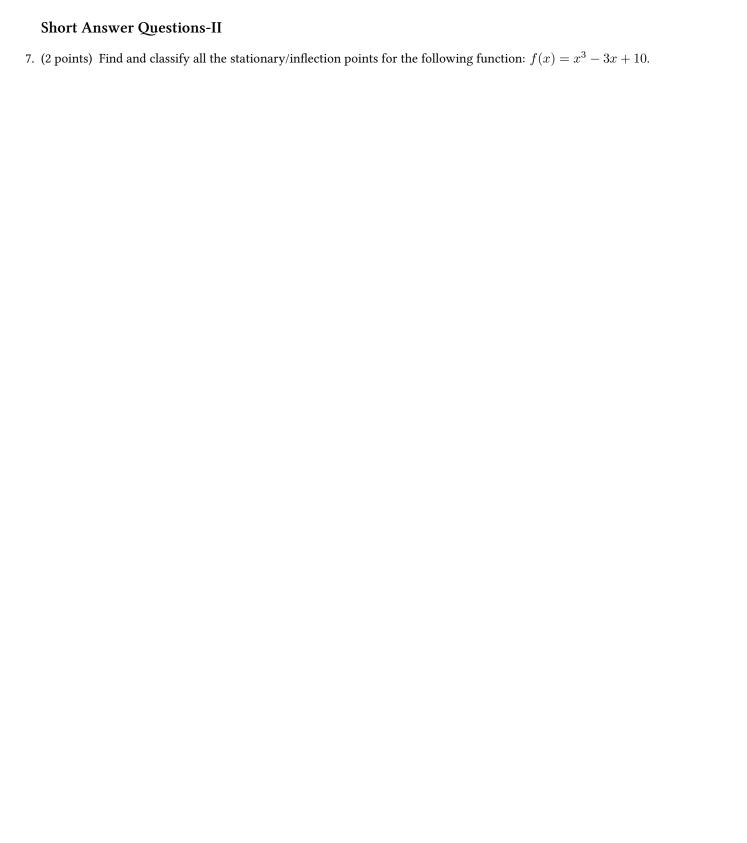
- 3. (1 point) Let  $f(x) = \sqrt{2x + \sqrt{x}}$ . Then f'(x) is
  - A.  $\frac{2\sqrt{x}+1}{2\sqrt{x}(\sqrt{2x+\sqrt{x}})}$ B.  $\frac{2\sqrt{x}+1}{4\sqrt{x}(\sqrt{2x+\sqrt{x}})}$

  - $\text{C. } \frac{4\sqrt{x}+1}{4\sqrt{x}(\sqrt{2x+\sqrt{x}})}$
  - D.  $\frac{2\sqrt{x}+1}{(\sqrt{2x+\sqrt{x}})}$

Answer: \_

## **Short Answer Questions-I** 4. (1 point) Without using calculus, compute the minimum (or the maximum) value of the following function: $f(x) = 7 - (x - 4)^2$ . (Hint: Graph the function.) 5. (1 point) Let $3xy^2 + x^2y = 5$ . Find $\frac{dy}{dx}$ . Simplify the answer as much as possible. 6. (1 point) Let $f(x) = \ln(2 + e^{x-1})$ and let $g(x) = f^{-1}(x)$ . Find g'(x).





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