| Name: | Roll Number: |  |  |
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#### Quiz 03 (Set B)

SIAS, Krea University (AY 2025-26) Mathematical Methods for Economics (Course Code: **ECON211**) 05 September 2025

Maximum Points: 10 Duration: 30 minutes

Dear students,

#### 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) If  $f(x) = x^2$ ,  $g(x) = x^2 + 3$  and  $h(x) = (x+3)^2$ , then
  - A. the graph of g(x) can be obtained by shifting f(x) downwards by 3 units.
  - B. the graph of h(x) can be obtained by shifting f(x) to the right by 1 unit.
  - C. the graph of h(x) can be obtained by shifting f(x) to the left by 1 unit.
  - D. the graph of g(x) can be obtained by shifting f(x) upwards by 3 units.

Answer: \_\_\_\_\_

- 2. (1 point) Let f(x) = 100. Then,
  - A.  $f^{-1}(x)$  does not exist.
  - B.  $f^{-1}(x) = 100$
  - C.  $f^{-1}(x) = \frac{1}{100}$
  - D.  $f^{-1}(x) = \frac{1}{100x}$

Answer: \_\_\_\_

3. (1 point) Consider the following statements:

Statement (i):

 $\lim_{x\to 2} |x-2|$  does not exist.

Statement (ii):

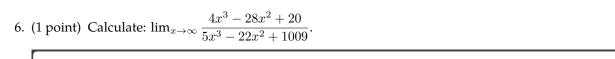
- f(x) = |x 2| is not differentiable at x = 2.
  - A. Both (i) and (ii) are correct.
    - B. Statement (i) is correct but statement (ii) is wrong.
    - C. Statement (i) is wrong but statement (ii) is correct.
    - D. Both (i) and (ii) are wrong.

Answer: \_\_\_\_\_

# **Short Answer Questions-I**

| 4  | (1 . 1)   | Compute | dy                                   | 4 .  | 2   |
|----|-----------|---------|--------------------------------------|------|-----|
| 4. | (1 point) | Compute | $\frac{y}{dx}$ if $y = \frac{y}{dx}$ | 4x + |     |
|    |           |         | ax                                   |      | 1/X |

|    | 3x-1  |
|----|---|
| 5. | (1 point) Compute the inverse of the following function: $f(x) = \frac{3x-1}{3x+1}$ . |
|    |   |
|    |   |



# **Short Answer Questions-II**

| 7. (2 points) |  | The demand function for Ruinmyshow tickets is given by |
|---------------|--|--|
|               |  | p = -0.04q + 800                                       |

$$p = -0.04q + 800$$

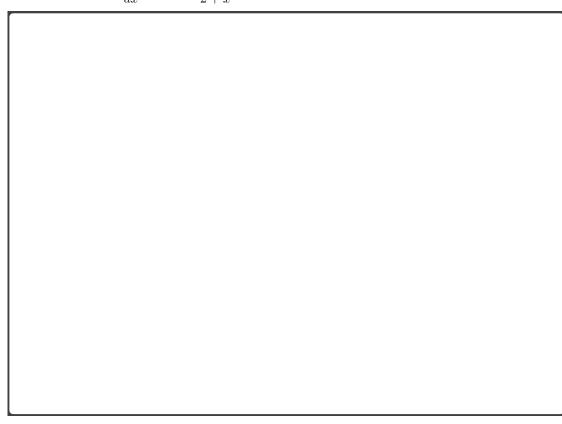
| (a) (1 point) Compute the marginal revenue. |   |  |  |
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| (b)   | (1 point) Calculate the approximate revenue from selling the 5001st ticket. |  |  |
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| 8. (2 | points) | There are | two parts | in this | question |
|-------|---------|-----------|-----------|---------|----------|

(a) (1 point) Calculate a such that the following function is continuous for all x.  $f(x) = \begin{cases} ax - 2 & \text{if } x \leq 1 \\ 2x^2 + 1 & \text{if } x > 1 \end{cases}$ 



(b) (1 point) Compute  $\frac{dy}{dx}$  if  $f(x) = \frac{2-x^2}{2+x^2}$ .



### Rough Work