Name:	Roll Number:

### Quiz 03 (Set A)

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) Consider the following statements:

### Statement (i):

 $\lim_{x\to 0}|x|$  does not exist.

### Statement (ii):

f(x) = |x| is differentiable at x = 0.

- 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:

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

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

3. (1 point) Let f(x) = 2. Then,

A. 
$$f^{-1}(x) = 2$$

B. 
$$f^{-1}(x) = \frac{1}{2}$$

C. 
$$f^{-1}(x) = \frac{1}{2x}$$

D.  $f^{-1}(x)$  does not exist.

Answer:

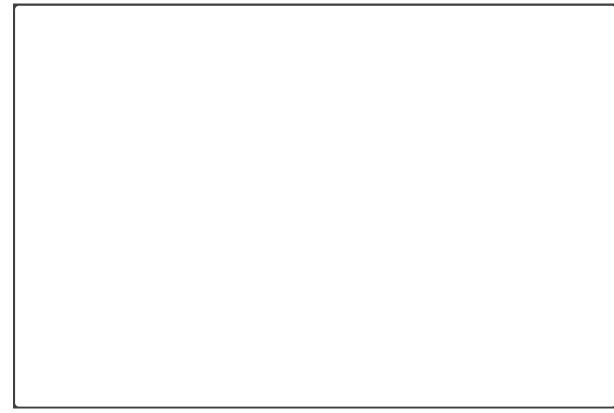
### **Short Answer Questions-I**

4. (I point) Calculate: $\lim_{x\to\infty}\frac{x^3-68x^2+20}{4x^3-2x^2+1009}$ .  5. (I point) Compute $\frac{dy}{dx}$ if $y=2x+\frac{1}{\sqrt{x}}$ .
5. (1 point) Compute $\frac{dy}{dx}$ if $y=2x+\frac{1}{\sqrt{x}}$ .
6. (1 point) Compute the inverse of the following function: $f(x) = \frac{2x-1}{2x+1}$ .
2x+1

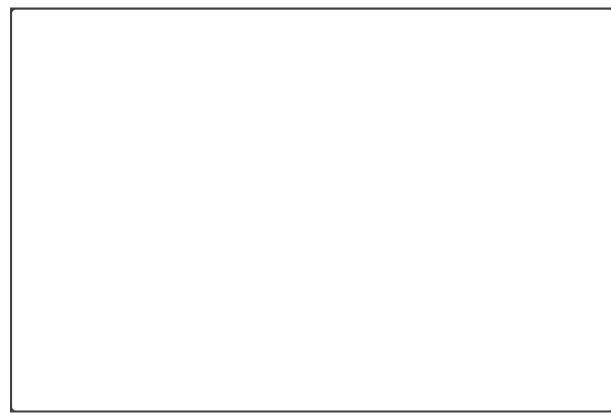
## **Short Answer Questions-II**

7.	(2 points)	There are	two parts	in this	question.
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(a) (1 point) Calculate a such the following function is continuous for all x.  $f(x) = \begin{cases} ax - 1 & \text{if } x \leq 1 \\ 3x^2 + 1 & \text{if } x > 1 \end{cases}$ 



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



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(1 point)	Compute the	e marginal ı	evenue.				
(1 point)	Calculate the	e approxima	ate revenue	from selling	the 41st ticke	et.	
(1 point)	Calculate the	e approxima	ate revenue	from selling	the 41st ticke	et.	
(1 point)	Calculate the	e approxima	ate revenue	from selling	the 41st ticke	et.	
(1 point)	Calculate the	e approxima	ate revenue	from selling	the 41st ticke	et.	
(1 point)	Calculate the	e approxima	ate revenue	from selling	the 41st ticke	et.	
(1 point)	Calculate the	e approxim	ate revenue	from selling	the 41st ticke	et.	
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(1 point)	Calculate the	e approxim	ate revenue	from selling	the 41st ticke	et.	

8. (2 points) The demand function for Lollafalooda tickets is given by

