Math 1271 Section 30 Recitation Quiz 9

Grader: Cihan Bahran Name: _____

Time limit: 20 minutes TA: _____

NO CALCULATORS. NO HANDHELD DEVICES. NO BOOKS OR REFERENCE MATERIALS OF ANY KIND.

1. (35 points) Evaluate the limit

$$\lim_{n\to\infty}\left(\frac{1}{n}\sum_{j=1}^{n}\frac{1}{1+\frac{j^2}{n^2}}\right)$$

by first converting it to a definite integral.

2. (10 points) Is the following statement true or false?

Both $\dfrac{\sec^2 x}{2}$ and $\dfrac{\tan^2 x}{2}$ are anti-derivatives of the function $(\sec^2 x)(\tan x)$.

True False

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3. (20 points) Consider the function

$$f(x) = \int_0^x (t^2 - 5t + 6)dt\,.$$

Which of the following tables describes the maximal intervals of increase and decrease for f?

A)

$x \leq 2$	$2 \leq x \leq 3$	$x \geq 3$
inc.	dec.	inc.

B)

$x \leq 2.5$	$x \geq 2.5$
inc.	dec.

C)

$x \leq 2$	$2 \leq x \leq 3$	$x \geq 3$
dec.	inc.	dec.

D)

$x \leq 2.5$	$x \geq 2.5$
dec.	inc.

4.(35 points) Compute the indefinite integral

$$\int \left(e^{6x} + \cos(x/5) + \frac{x^4 + 2x^3 + 8}{\sqrt{x}} \right) dx$$

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