Math 102 - Quiz#1

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Name:

ID No.: Serial No.:

1. **Find** an estimate of the area under the graph of $y = \frac{1}{x}$ from $x = 1$ to $x = 7$ using three approximating rectangles and Midpoints rule.

2. **Find** the value of

$$\lim_{n \to \infty} \frac{1}{n} \sum_{i=1}^{n} \frac{1}{1 + (i/n)^2}$$

3. **Find** the $\int_0^8 f(x)\,dx$ where $f(x)=\begin{cases}|x-1| & \text{if } 0\le x\le 2\\ \sqrt{9-(x-5)^2} & \text{if } 2<x\le 8\end{cases}$.

(you may interpret the integral in terms of areas)

4. If $f(x)=\int_0^{\sin x}\sqrt{1+t^2}\,dt$ and $g(y)=\int_3^y f(x)\,dx$, find $g''(\pi/6)$.