

Full Name:
ID:
Section:

Question 1 Using four rectangles and midpoints to approximate the area under the graph of $f(x) = x^2 + 2x$ from $x = 0$ to $x = 8$.

Question 2 Use the definition of the definite integral to evaluate:

$$\lim_{n \rightarrow \infty} \sum_{i=1}^n \frac{4}{n} e^{4 + \frac{3i}{n}}.$$

Question 3 Let $f(x) = x$ if $0 \leq x \leq 1$ and $\sqrt{1 - (x - 1)^2}$ if $1 \leq x \leq 2$. Evaluate the integral $\int_0^1 f(x) dx$ by interpreting it as an area.

Question 4 Evaluate $f(0) + f'(0)$ if

$$5 + \int_5^x e^{-t} f(t) dt = 5x.$$

Question 5 Find

$$\int \frac{x + 2}{\sqrt[3]{2 - x}} dx.$$