King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 102 (162) Sec 35 - Quiz 1

Name: ID: Serial No.:

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

2. Find the value of the $\lim_{n\to\infty} \sum_{i=1}^{n} \left(\frac{4i}{n^2} + \frac{3}{n} \right)$

3. By interpreting it as an area, find the value of the integral

$$\int_{-3}^{0} (|x-1| + \sqrt{9-x^2})dx$$

4. If $G(x) = \int_{\sin x}^{\cos(3x)} \frac{1}{\sqrt{1+4t^2}} dt$. Find $G'\left(\frac{\pi}{2}\right)$

5. Find the value of the integral $\int_0^1 \frac{x^3+x^2+x+1}{x+1}dx$

6. If f is an even function and $\int_{-1}^{1} f(x)dx = 5$ and $\int_{-2}^{2} f(x)dx = 2$. Then find the value of $\int_1^2 f(x)dx$

7. Use the properties inegral of integrals to verify the following inequality

$$\frac{\sqrt{2}\pi}{24} \leq \int_{\pi/6}^{\pi/4} \cos x \, dx \leq \frac{\sqrt{3}\pi}{24}$$