King Fahd University of Petroleum and Minerals
Quiz: 1 Math 102 Semester: 151 Duration: 45 minutes

Full Name: ID:
Section: Serial number:

Question 2 Evaluate

$$\int_0^5 f(x)\,dx$$

where

$$f(x) = \begin{cases} 1-x & \text{for } 0 \le x \le 1 \\ -\sqrt{4-(x-3)^2} & \text{for } 1 \le x \le 5 \end{cases}$$

Given that $\int_1^3 f(3x+1)\,dx = 9$ and $\int_2^5 f(2x)\,dx = 8$. Find $\int_2^4 f(x)\,dx$

If $\int_x^{x^2+1}(f(t)+t^2)\,dt = 3\sin x$ where f is continuous, then find $f(0)$.

Find the area of the region bounded by $y = 2-x^2$, $x = -11$, $x = 1$ and $y = \frac{1}{2} + \sqrt{1-x^2}$

Question 3 Evaluate the following integrals:

c) $\int \frac{1+\sin x}{\cos^2 x}\,dx$

d) $\int_{-3}^{3}(x\sin^2 x + \tan x\sqrt{1-x^2})\,dx$

g) $\int \sqrt{\frac{5x-1}{x^5}}\,dx\,.$

Find the area of the region enclosed by $x = 1-y^2$, $x = |y|-1$