King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 102 (162) Sec 30 - Quiz 3

Name: ID: Serial No.:

1. Find the average value of the function $f(x) = x^3 \ln x$ on the interval $[1, 3]$.

2. Find the number c so that $f(c)$ is the average value of the function $f(x) = \sqrt[3]{x}$ over the interval $[0, 3]$.

3. Using the method of cylindrical shells, set up, but do not evaluate, an integral for the volume of the solid obtained by rotating the region bounded by the curves $y = e^{2x}$, $y = e^2$, and $x = 0$

    (a) about the line $x = -2$.

    (b) about the x-axis.

4. Find $\int_0^{2\pi} t^2 \cos 2t \, dt$

5. First make a substitution and then use intergration by parts to evaluate the integral $\int \sin \sqrt{x}\, dx$.