King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics
Math 102 (162) Sec 35 - Quiz 5

Name: ID: Serial No.:

1. Find the exact length of the curve.

$$y = \frac{1}{4}x^2 - \frac{1}{2}\ln x, \quad 1 \leq x \leq 2$$

2. Find the exact area of the surface obtained by rotating $x = 1 + 2y^2, \quad 1 \leq y \leq 2$ about the x-axis.

3. Determine whether the sequence $a_n = \left(1 + \frac{2}{n}\right)^n$ converges or diverges. If it converges, find the limit

4. Determine whether the series $\sum_{n=1}^{\infty} \left(\cos \frac{1}{n^2} - \cos \frac{1}{(n+1)^2} \right)$ is convergent or divergent. If it is convergent, find its sum.

5. Express the number $1.53\overline{42}$ as a ratio of integers