Prince Sultan University
MATH 113
Second Examination
First Semester 2014/2015, Term 141
Wednesday, 19th November 2014
Dr. Bahhaeldin Abdalla & Dr. Ahmed Kaffel

Time Allowed: 70 minutes
Maximum points: 30 points

Name: _____ ID Number # _____

Important Instructions:

1. You may use CASIO scientific calculator that does not have programming or graphing capabilities.
2. You may NOT borrow a calculator from anyone.
3. You do NOT get special consideration if you forget your calculator.
4. Don't use notes or any notebook.
5. There should be NO talking during the examination.
6. Your exam will be taken immediately without any warning if your mobile is seen or heard.
7. You must show all your work beside the problem. Be organized.
8. You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.
9. This examination has **5** problems, some with several parts. Make sure that your paper has all these problems

Problem	Max points	Student's Points
1	11	
2,3	10	
4,5	9	
Total	***30***	

1. (12 points) Evaluate each integral.

(a) $\int \frac{\ln x}{\sqrt{x}}\, dx$

(b) $\int \tan^2 x \ \sec^4 \mathrm{x}\ dx$

(c) $\int_0^1 \sqrt{x^2+1}\ dx$

2. (5 points) Make a substitution to express the integral $\int \frac{dx}{2\sqrt{x+3}+x}$ as a rational function and then evaluate the integral.

3. (5 points) Evaluate $\int_0^9 \frac{dx}{\sqrt[3]{x-1}}$ if possible.

4. (4 points) Find the exact length of the curve

$$y = \ln(\sec x), \quad 0 \le x \le \pi / 4.$$

5. (5 points) The curve $y = \frac{x^3}{6} + \frac{1}{2x}, \quad \frac{1}{2} \le x \le 1$ is rotated about the x-axis. Find the area of the resulting surface.