Prince Sultan University

Deanship of Educational Services Department of Mathematics and General Sciences



COURSE DETAILS:

Calculus II	MATH 113	FINAL EXAM
Semester:	Fall Semester Term 181	
Date:	Saturday December 15 th , 2018	
Time Allowed:	3 hours	

STUDENT DETAILS:

Student Name:	
Student ID Number:	
Section:	
Instructor's Name:	

INSTRUCTIONS:

- You may use a scientific calculator that does not have programming or graphing capabilities.
- NO borrowing calculators.
- NO talking or looking around during the examination.
- NO mobile phones. If your mobile is seen or heard, your exam will be taken immediately.
- Show all your work and be organized.
- You may use the back of the pages for extra space, but be sure to indicate that on the page with the problem.

GRADING:

	Page 2	Page 3	Page 4	Page 5	Total
Questions	#1	#2, #3	#4, #5	#6	
Marks	11	13	10	6	40

Q#1 [3+4+4 Marks Each] Evaluate the following integrals: 1. $\int \frac{x^4 + x^2}{x^3} dx$ The Solution:

1.
$$\int \frac{x^4 + x^2}{x^3} dx$$

2.
$$\int x\sqrt{x+1} \ dx$$

The Solution:

 $3. \int \tan^4 x \sec^4 x \, dx$ **The Solution:**

Q#2 [4 Marks] Evaluate the integral $\int \frac{x}{x^4+1} dx$

The Solution:

Q#3 [3+3+3 Marks each] Test the following series for convergence [Justify your answer]:

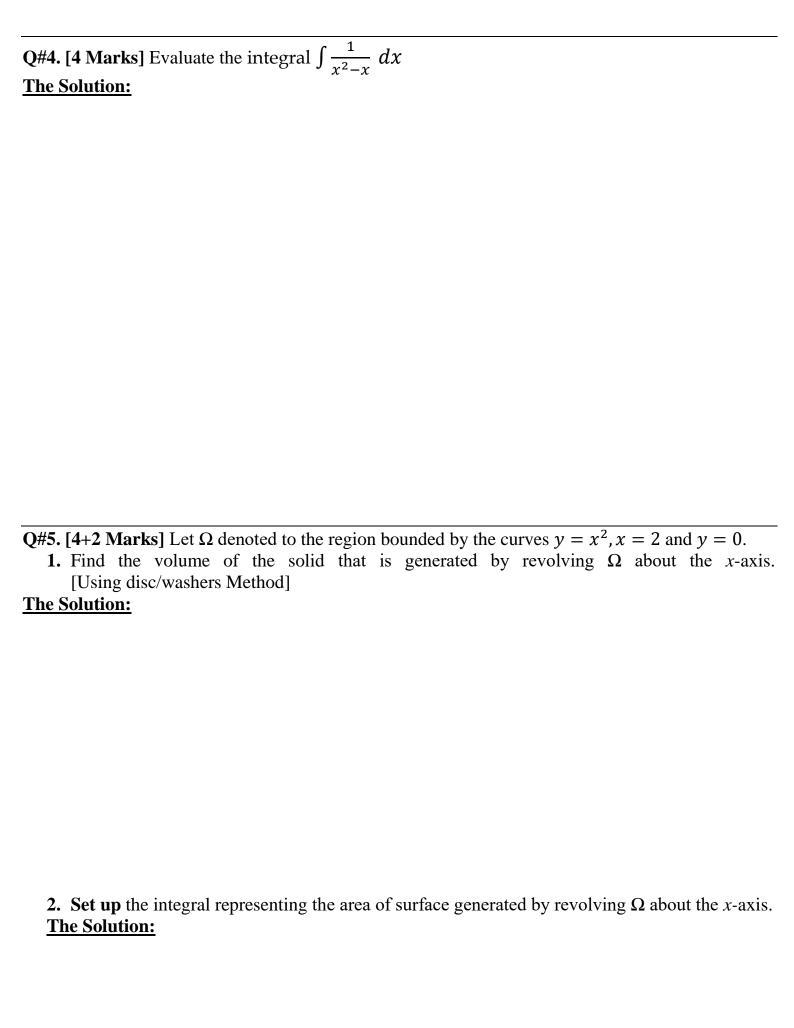
1.
$$\sum_{n=1}^{+\infty} \frac{n^2+1}{n^2+2}$$

The Solution:

2.
$$\sum_{n=1}^{+\infty} \sqrt[n]{3} - \sqrt[n]{2}$$

The Solution:

The Solution:



Q#6 [6 Marks] Find the interval and radius of convergence of the series: $\sum_{n=1}^{+\infty} \frac{(x-2)^n}{n}$

The solution: