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 182			
Date:	Saturday April 20th, 2019			
Time Allowed:	3 Hours			

STUDENT DETAILS:

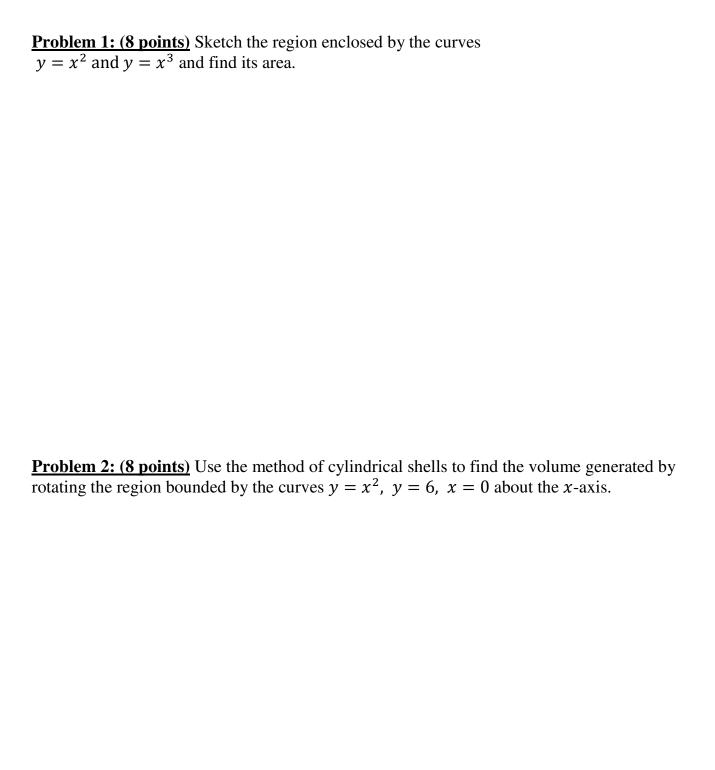
Student Name:	
Student ID Number:	
Section:	
Instructor's Name:	

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	Page 6	Total	Total
Questions	#1, #2	#3	#4	#5	#6		
Marks	16	12	12	24	16	80	40



Problem 3: (12 points; 4 points each) Evaluate the following integrals. a) $\int 7xe^{2x^2} dx$

b) $\int x^2 \sin \pi x \, dx$

c) $\int 5x(2x+1)^5 dx$

Problem 4: (12 points; 6 points each)

a) Write down the partial fraction decomposition of the function

$$f(x) = \frac{4}{(x^2 - 9)(x - 2)}$$

b) Evaluate the integral $\int f(x)dx$, where f(x) is the function in part (a).

Problem 5: (24 points; 6 points each)

Determine whether the following series converges or diverges.

a)
$$\sum_{n=1}^{\infty} \frac{\ln(n)}{n^2}$$

b)
$$\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{7n-2}$$

$$c)\sum_{n=1}^{\infty}\frac{(-2)^n}{n^4}$$

$$\mathrm{d}) {\textstyle \sum_{n=1}^{\infty}} \frac{\cos(3n)}{3^n}$$

Problem 6: (16 points; 8 points each)
Determine for which x, the following series converges. $a)\sum_{n=1}^{\infty} \frac{x^n}{2n+1}$

$$a)\sum_{n=1}^{\infty} \frac{x^n}{2n+1}$$

$$b)\sum_{n=1}^{\infty} \frac{(x-6)^n}{n^4}$$