

Math 31B
Integration and Infinite Series

Practice Midterm 2

Instructions: You have 50 minutes to complete this exam. There are 8 questions, worth a total of 10 points. This test is closed book and closed notes. No calculator is allowed. Please write your solutions on the scantron. Do not forget to write your name, section, and UID in the space below, as well as in your scantron.

Name: _____

ID number: _____

Section: _____

Question	Points	Score
1	1	
2	1	
3	1	
4	2	
5	1	
6	1	
7	2	
8	1	
Total:	10	

Problem 1. *1pts.*
8.6.43

Solution: The integral does not converge.

Problem 2. *1pts.*
8.6.49

Solution: Each integral has value $\frac{3}{2}$, with opposite signs.

Problem 3. *1pts.*

9.1.25

Solution: The arc length is $\sqrt{1 + e^{2a}} + \frac{1}{2} \ln \left(\frac{\sqrt{1+e^{2a}}-1}{\sqrt{1+e^{2a}}+1} \right) - \sqrt{2} + \frac{1}{2} \ln \left(\frac{1+\sqrt{2}}{\sqrt{2}-1} \right)$.

Problem 4. *2pts.*
9.1.39

Solution: The surface area is $\frac{\pi}{16}(e^4 - 9)$.

Problem 5. *1pts.*
9.4.46

Solution: Since $T_4(x) = x - \frac{x^3}{3!}$ and $K = 1$, this is the error bound for $n = 4$.

Problem 6. *1pts.*
9.4.51

Solution: The non-zero Maclaurin polynomials are $T_{4n}(x) = \sum_{m=0}^n (-1)^m \frac{x^{4m}}{(2m)!}$.

Problem 7. *2pts.*
11.1.29

Solution: The limit is $\frac{\pi}{3}$.

Problem 8. *1pts.*
11.1.36

Solution: The limit is 0.