

MATH 172 section 501, Sample Test #3, Fall 2008

Name .....

The test is about two hours long.

The test problems will be from the following sections: 8.9, 9.1, 9.2, 9.3, 9.4, 9.5, 10.1, and 10.2 !!!

Solve the following problems. Show the whole work. The maximal score is 100 pts.

1. Problem (10 pts, 8.9, Problem 20):  
(answer: 1.)
2. Problem (10 pts, 8 Review, Problem 56)  
(answer:  $\frac{\pi}{4}$ )
3. Problem (10 pts, 9.1, Problem 9)  
(answer is  $ye^y = x^3 - 8$ )
4. Problem (10 pts, 9.2, Problem 27)  
(answer: (a)  $I(t) = 4 - 4e^{-5t}$ ; (b)  $I(0.1) = 4 - 3e^{-0.5} \approx 1, 57A$ )
5. Problem (10 pts, 9.2, Problem 11)  
(answer:  $y = \frac{1}{2}x + Ce^{-x^2} - e^{-x^2} \frac{1}{2} \int e^{x^2} dx$ )
6. Problem (10 pts, 9.3, Problem 10)  
(answer:  $\ln(1 + \frac{2}{\sqrt{3}})$ )
7. Problem (10 pts, 9.4, Problem 15)  
(answer:  $\frac{\pi}{8}(21 - 8 \ln 2 - (\ln 2)^2)$ )
8. Problem (10 pts, Review 9.5, Problem 15)  
(answer:  $\bar{x} = \frac{\pi\sqrt{2}-4}{4(\sqrt{2}-1)}$ ,  $\bar{y} = \frac{1}{4(\sqrt{2}-1)}$ )
9. Problem (10 pts) Prove the Squeeze Theorem of Section 10.1
10. Problem (10 pts, Section 10.1, Problem 42)
11. There might be slight variation from this test, namely, replacing two problems of 10 pts each by four shorter problems of 5 pts each.