MA 181 Review Sheet for Test #4 – Spring, 2010
Riseberg

Test #4 will be given on Monday, May 3. It will include material from Sections 4.6 – 4.8 and 5.1 – 5.4. Be sure to bring your calculator to the test. If you forget your calculator or if your calculator is not working, go to the Math/Science Center in Room 02 Macklin Tower to get a short-term calculator loan.

IMPORTANT REMINDERS

MAKEUP POLICY: If you know in advance that you have to miss a quiz or test, you can make arrangements with me to take the quiz or test **before** it is given in class. Otherwise, no makeup quizzes will be given. If you miss a test, it may be made up only if you

- Do not have more than one unexcused absence during the time period covered on the test.
- Contact me on or before the scheduled test date.
- Can prove that you have a legitimate excuse.
- Either have completed the EWA homework on the relevant material or show me all homework on the relevant material.

If you do not meet these conditions, you will not be permitted to take a makeup test and the percentage equivalent of your final exam grade will be substituted for the grade of the missed test. No student will be permitted to take more than one makeup test.

ACADEMIC HONESTY: All students are expected to do their own work on quizzes and tests. Students are expected to observe the following rules during any test or quiz.

- Students may not use or even hold a cell phone, ipod, or any other electronic device (other than a calculator). **Any student who is found to have such a device turned on during a test or quiz will receive a grade of zero on that test or quiz.**
- Students may not speak to or share materials with other students.
- Students should have all materials ready at the beginning of the quiz or test.
- Students should remain in the room during the entire test or quiz.

Appropriate penalties will be imposed for breaches of academic honesty.

FOR THIS TEST, YOU SHOULD BE ABLE TO

- Solve optimization problems involving applications.
- Apply the Second Derivative Test to determine whether a function has a local maximum, minimum or neither at a critical number.
- Use Newton's Method to find the solutions of an equation to a stated number of decimal places.
- Find the general antiderivative of a given function; find a specific antiderivative if initial conditions are provided.
- Use antiderivatives to solve applied problems involving velocity and/or acceleration.
- Estimate the area of a region given algebraically or graphically by using left endpoints, right endpoints or midpoints as the sample points.
- Estimate the total distance traveled by an object if the velocity of the object is given graphically, numerically, or algebraically.
- Use Riemann Sums to estimate definite integrals.
- Use properties of definite integrals to evaluate definite integrals.

OVER →

- Use the Net Change Theorem to determine the net change in a function if the rate of change

of the function is given; interpret your result verbally.

- Find general indefinite integrals.
- Use the Fundamental Theorem of Calculus to
  (a) Evaluate definite integrals
  (b) Find the derivative of a function defined as an integral
  (c) Obtain information from the graph of a function defined as an integral and sketch a graph of the function.

Recommended Review Problems:

	Chapter 4 (pp. 323 – 326)	Chapter 5 (pp. 423 – 427)
Concept Check	10	1 – 5
True-False	7	1 – 4, 6
Exercises	39, 40, 43, 45, 49, 50 – 55, 57, 58, 61, 63a, 63c	1, 3, 4, 5, 8 – 11, 13, 37, 39, 40, 63, 65, 70

Additional Exercises

1. A rectangular region is to be enclosed with a fence. One side faces the street and will have decorative fencing costing \$20 per foot, while the remaining three sides will have plain fencing costing \$10 per foot. The area of the region is to be 3200 square feet. Use the methods of Calculus to determine the dimensions of the region which will minimize the cost of the fencing.

2. The lateral surface area of a solid right circular cylinder is 4π square meters. A hemisphere whose diameter is equal to the diameter of the cylinder is cut from the solid cylinder. Find the dimensions of the cylinder if the remaining volume is to be a maximum or minimum. Determine which (a maximum or a minimum).

Answers

Chapter 4 Exercises

40. (4, 2)

50. 0.268881, 2.770058

52. $G(t) = 2t^{1/2} + \frac{2}{3}t^{3/2} + C$

54. $f(u) = \frac{1}{2}u^2 + 2\sqrt{u} + \frac{1}{2}$

58. $s(t) = -\sin t - 3\cos t + 3t + 3$

Chapter 5

TF 2. F 4. F 6. T

Exercises

4. $\int_0^{\pi} \sin x\,dx = 2$

8 (*a*) $e^{\pi/4} - 1$

(*b*) 0

(*c*) $e^{\arctan x}$

10. $\frac{1}{5}T^5 - 4T^2 + 7T$

40. $\frac{\cos^3 x}{1 + \sin^4 x}$

70. $f(t) = \cos t,\ a = \pi/6$

Additional Exercises

1. Street side and side parallel to street: $\frac{80\sqrt{3}}{3}$ *ft* , sides perpendicular to street: $40\sqrt{3}$ *ft*

2. r = 1 meter, h = 2 meters; it is a maximum