

## Midterm I: Some problems for review

The exam will be taken at the Testing Center during 10/02 - 10/03. At the Testing Center, you go to Canvas and navigate to Midterm I in Week 6 module. You will be directed to WebAssign. It will ask you for an access code. The proctor will give you the code. Although all questions are automatically graded, you have an option to show your work (by typing in a box) so that you can earn some extra credit even if your final answer is incorrect.

The material covered is Section 6.1, 6.2, 6.3, 7.1 - 7.5, 7.7, 7.8. It is a closed book exam. You can bring the trigonometric identities cheat sheet which was handed in class. A scientific calculator is allowed. Graphing/programmable/transmittable calculators are not allowed. Phones are not allowed. You should review the homework problems, worksheets, quizzes, examples given in the lectures. It is always a good idea to study for the exam with someone. Some problems to practice:

1) Find the area of the region bounded by the curves  $x + y = 1$  and  $x^2 + y = 1$ .

2) Find the volume of the solid obtained by revolving the region in Problem 1 about the line  $y = -1$ . Use both cross-section method and cylindrical shell method.

3) Find the following integrals:

(a)  $\int \sqrt{x} \ln x \, dx$

(b)  $\int_0^7 \frac{1}{\sqrt[3]{x+1}} \, dx$

(c)  $\int_0^{\pi/2} \sin^3(2x) \cos^2(2x) \, dx$

(d)  $\int_0^{\pi/2} \sin^2(2x) \cos^2(2x) \, dx$

(e)  $\int_1^3 \frac{x^3-1}{x+2} \, dx$

4) Use the left endpoint and midpoint rule with  $n = 3$  to evaluate the integral  $\int_1^4 \frac{1}{x^3+1} \, dx$ .

5) Does the improper integral  $\int_0^\infty \frac{1}{x^2} \, dx$  converge? If so, find its value.