

Spring Break Special Questions

These questions constitute an import part of the course requirements and taken together, will count 40 points of your test 2. **It is due on the beginning of class, Tuesday, March 22, 2011.**

Instructions: A major purpose of these questions is to contribute to the development of your skills in communicating mathematical ideas, in carrying out rigorous mathematical investigation, and in writing mathematical proofs. Your papers will be graded on style (quality of presentation) as well as on substance (mathematical content). You should take pains to present your work in a neat and well-organized fashion and to clearly explain your arguments in terms that are precise and unambiguous. Notice that your solutions should be on the separated sheets and to be stapled.

Honor Code: Discussing the problems with other students is permissible. However, when it comes time to prepare that paper that you will be submitting, you should do so individually and should not share your work with others or use the work of others. I will NOT accept papers where (in my best judgment) this code has been violated.

Find the volume of the solid obtained by rotating the region bounded $y = \arcsin(x)$, $y = x$, $x = 0$, $x = 1$ about

- (a) x -axis using washer method.
- (b) y -axis using washer method.
- (c) x -axis using cylindrical shells method.
- (d) y -axis using cylindrical shells method.

Note that the solutions of (a) and (d) and the solutions of (b) and (c) should be the same.