

## MATH 184 Workshops

Workshops are a *1.5 hour facilitated learning activity* designed to be of benefit to first year Calculus students. Previous study suggests that students grades on the final exam are improved through the workshop activity. Attendance is *mandatory* with 10% of the course grade based on the workshops.

**Workshop Activities:** During the workshops you will be

- actively thinking about and solving problems involving calculus,
- practicing doing calculations,
- interacting with peers to solve problems involving Mathematics,
- receiving feedback to help you identify and work on correcting possible weaknesses.

**Learning Goals:** From the activities in the workshops you will

- after reading a problem, be able to correctly state in your own words what the problem is asking and what information is given that is needed in order to solve the problem;
- after restating the problem, be able to identify which mathematical techniques and concepts are needed to find the solution;
- be able to apply those techniques and concepts and correctly perform the necessary algebraic steps to obtain a solution.

The workshops should help you to judge in advance what is a suitable solution method. And after solving a problem, you should be more able to judge if the solution makes sense.

Understand that the workshops are *not* a replacement for home study. They will assist you in identifying your areas of weakness and helping you to develop your ability to learn and analyze problems. MATH 184 has 4 credits and so you should expect to do 1/3 more work than for a regular 3 credit course perhaps on average 8 hours work outside of class per week.

**Workshop Format:** The workshop format will involve having you split up into groups of 3 or 4 students. You will have a worksheet and you will go through the problems in turn on the blackboard and will get feedback from the TAs on your progress. They will also facilitate you in thinking about the problems but they are not there to give you the answer. Writing things down (on the blackboard) will be a good way to learn some strategies for doing problems, confront your weaknesses and identify areas for home study. Your group will sometimes be asked to present a problem you have already solved to a TA.

**Role of TAs:** TAs will give you feedback on your progress as you work through a problem. They will also facilitate you in thinking about the problems but they are not there to give you the answer. They may be give you hints and suggestions on how to approach a problem, or prompt you to discover for yourself the reason for your errors.

## Grading:

1. Attendance and Participation: 50%. To get full marks on attendance and participation you must:
  - (a) Arrive on time and stay until the end of the workshop.
  - (b) Participate in problem-solving with your group at the blackboard.
  - (c) Take a turn writing on the blackboard.
  - (d) Give your other group members a chance to participate and write at the blackboard.
  - (e) Not be distracting to your group members or other groups, or be on your cell phone.

Each week you will be graded out of 3 for attendance/participation, and your best 10 will count.

2. Presentations: 50%. Sometimes your group will be asked to give a presentation to the TA on a problem your group has already solved. When this happens, your group will nominate a 'presenter' and that person will lead the presentation and write on the blackboard. The other group members are free to help the presenter, but the presenter must be leading the presentation. You will be graded (out of 3) on your ability to explain your solution, as well as your correctness. Each person must:
  - (a) Be involved in at least 5 presentations during the term (so roughly every other week).
  - (b) Be the 'presenter' at least once during the term.

**Solutions:** <http://www.math.ubc.ca/~anstee/math184workshops/workshops.html>

At this website you will find full solutions for the workshop questions, posted at the end of each week.