

**MATH 515 HOMEWORK-5 DUE AT THE BEGINNING OF CLASS ON TUESDAY,
NOVEMBER 3.**

One goal for this course is for you to develop your skill in effectively communicating mathematics. With this in mind, you should clearly write up your solutions. Solutions with little or no justification will receive little or no credit.

- (1) Read at least the first half of chapter 4.
- (2) A bug, (which does not fly), is sitting 3 feet below the ceiling in the corner of your room. You are in sitting in the opposite corner, and you wonder when the bug will get to your head, which is 4 feet off of the ground. You live in NY, so the room is a $12' \times 12' \times 12'$ cube.

Find the length of the shortest path from the bug to you, and prove that it is the shortest path.

- (3) On page 144, do the second half of problem 8.
- (4) From chapter 4, do problems 15 and 18.