

## 3 Sept 2014

Math 181

### Discussion:

1. Who found the shortest circuit in the NYC problem?  
I found a circuit that repeats 48 edges. (Total length is 94.)
2. Traveling between Avenues in Manhattan is much longer than traveling between Streets. What ideas do you have for modeling this difference in our graph?  
As with the Traveling Salesman Problem, you could assign distances to the edges, and then the goal is not necessarily to find the eulerization with fewest duplicated edges, but rather an eulerization with the least “cost” of duplicated edges.  
Another alternative would be to add extra vertices on edges corresponding to longer distances.
3. What applications of Euler circuits and eulerizations did you come up with?  
I had to mow the lawn this weekend, and I thought of breaking my lawn up into squares. I must mow each square at least once, but want to avoid retracing my work. Also, I have to start and end at the gate next to my garage.  
The same idea can be applied to vacuuming.
4. Spotlight 3.2 discusses some important concepts. First, always check **all** hypotheses of a theorem before using its conclusion. They are there for a reason.
5. The last paragraph of Spotlight 3.2 mentions machine scheduling, bin packing, and NP-complete. Did you recognize that these are terms that must be defined before you can fully understand what they’re talking about?

### Homework:

Your assignment for Friday is to read Spotlights 3.3 and 3.4 (pages 96–97). Take note of any terms or definitions that you do not recognize. On Friday we will start talking about graph coloring, and I will go over any of the terms/definitions that you write down; everything else, I will assume you understand.