HOMEWORK 19
DISCRETE MATHEMATICS II
DUE 04-15

(1) In class today, we discussed how Euler (essentially) chose to model the bridges of Königsberg by a graph in which the vertices represent banks of the river Pregel, and edges represent bridges.
   (a) Another suggestion was to let *vertices* represent bridges. In this case, when would two vertices be connected by an edge? Could there be loops or multiple edges?
   (b) Discuss why your model in (a) is preferable to Euler's, or why Euler's model is preferable to yours. (There is no right or wrong answer here; you just need to pick a position and argue for it.)

(2) This problem will *not be collected*. I encourage you to work on it on your own, without looking at the book, before class on Thursday 04-10; but *do not submit it*.
   (a) How could the bridges of Königsberg problem be converted to a question about Euler's graph?
   (b) Can the citizens of Königsberg come up with a way to cross each bridge exactly once, and return to where they started? Explain why or why not.

- **Four** book problems: #10.4.30, 57, 61; #10.5.11. "Figure 1" referenced in #10.4.57 is on p. 679.