Spring 2019
Barge Problem 5

Phobos and Deimos. You’ve spent your spring break visiting Mars’ two moons, Phobos and Deimos, where you met a lot of new Martians. You invite them to your house on Mars, and 100 people from Phobos (which we’ll call “Phobots”) and 100 people from Deimos (called “Deimons”) show up at your house. They are standing around outside in such a way that no three people are in a line.

= Phobot
= Deimon

Six Phobots joined to six Deimons with no crossings.

For fun, you get 100 ropes. Each Phobot and Deimon is standing still, and will not move for the rest of this exercise. Each rope will be held tightly at one end by a Phobot and the other end by a Deimon, and the ropes are not allowed to cross each other.

Is it always possible to join the 100 Phobots to the 100 Deimons with non-crossing ropes? If so, give a convincing argument that this is always possible, regardless of the positions of the 200 Martians (assuming no three are in a line). If not, give a careful example and proof to show how this could fail.

Barge Prizes

First Prize $1000
Second Prize $750
Third Prize $500

1. Form a team with other Lafayette students. Each team must have 3, 4 or 5 members.
2. The weekly problem will be posted online https://math.lafayette.edu/teambarge/ and in the Math Dept. There will be 8 problems during the semester.
3. Get your solution to Gary Gordon by Saturday, April 6. You can either turn in a hard copy or send your solution by email to gordong@lafayette.edu.
4. Don’t Quit! Keep turning in problems, even if you’re not 100% sure of your solution.

Due Date: Saturday, April 6.