Team Exercise #6 - Moving the Couch

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The Conversation

“What are you doing?” asked Diane.
“Moving the couch.” grunted Jack.
“Yes, I can see that.” replied Diane, “But, why are you moving the couch?”
“Are you going to help me move this or are you going to just stand there and ask me stupid questions?” snapped Jack.
“Well, with that attitude you can move it yourself.” answered Diane.
“Ok, ok, I’m sorry, it’s just heavy that’s all.” apologized Jack. “I’m moving the couch to make it more convenient in here.”
“What do you mean?” asked Diane.
“Well, I figure when I’m on the couch, I either get up to go to the bathroom, the refrigerator, or to change the disk in the DVD player. So, I figured I’d make the couch as close as possible to all three.” said Jack.
“Wouldn’t that just be the place that’s the same distance from the bathroom, the fridge, and the DVD player?” asked Diane.
“I don’t think so.” said Jack, “I think I want to put the couch at the point where the sum of the distances to those three locations is as small as possible. Look, I made a sketch and did some calculations.”
“Jeez, that seems like a lot of effort just to figure out where to put the couch. If you’d put your mind to something useful, you’d make enough money so that you could buy a robot to go to the fridge for you!”
“Nah, I did that problem too.” said Jack, “the effort I’d need to put in to make enough money to buy the robot far outweighs the benefit of saving a few trips to the fridge.”
Diane sighed in exasperation. “Well, at least you can get some exercise by moving the couch yourself.” she muttered walking away.

Questions for Discussion/ Questions to Answer

- Jack and Diane introduced two ideas for where to put the couch to “optimize” Jack’s lifestyle. What were they?

- Which of the two optimal placements of the couch do you think is really optimal? Why?
• Make Jack and Diane’s two optimization schemes precise. Set them up as mathematical problems. Use all of the techniques you know to solve these problems and compare the solutions. Include plots and graphs to illustrate your results.