Name (Last, First): ____________________ Student ID: ____________________

Dror Bar-Natan: Classes: 2014-15: MAT 475 Problem Solving Seminar: http://drorbn.net/15-475

Quiz 2 "Draw a Figure", January 20, 2015. You have 30 minutes to solve as much as you can of the following problems. Please write on both sides of the page. **Good Luck!**

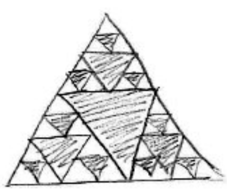
Problem 1 (Larson's problem 1.2.6). Let ABC be an acute-angled triangle (all angles below 90°), and let D be on the interior of the segment AB. Describe how one can find points E on AC and F on BC such that the triangle DEF will have the minimal possible perimeter.

Problem 2 (Larson's problem 1.2.9). Let $0 < a < b$ be real numbers. If two points are selected at random from a straight line segment of length b, what is the probability that the distance between them is at least a?

Problem 3 (no credit). Use the back of this quiz to draw a figure of something interesting. The best figures will be placed somewhere on this class' web site.

Problem 3 solution by Alessandra:

3.



Sierpinski Triangle
↳ if you continue to eliminate the interior triangle of every large triangle, and calculate the area of the eliminated space, you will see it is equal to the area of the full triangle.

Problem 3 solution by Shola:

Problem 3