Homework Assignment #2

Due February 18

1. Following the notation in Jones's paper, label the 10 regions in the 2-simplex determined by the normalized quota $q = \frac{5}{8}$ for a system with three voters A, B, and C. Determine the Penrose measures for systems in each of these regions. Be certain to indicate to which region each boundary belongs.

2. Create examples of the following or explain why no such example exists. Your examples should include integer values for the quota and weights, and you should use the geometry of the 2-simplex to explain your reasoning. In addition, none of the systems in your examples should lie in one of the dictator regions R_1, R_2 or R_3.

   (a) An example with a normalized quota of $q = \frac{5}{8}$ that demonstrates the Paradox of Redistribution where B's weight increases but its power decreases.

   (b) An example with a normalized quota of $q = \frac{5}{8}$ that demonstrates the Paradox of a New Member where initially, B and C are the only voters.

   (c) An example with a normalized quota of $q = \frac{2}{3}$ that demonstrates the Paradox of Large Size.

   (d) An example of the Paradox of a New Member where the initial system is $[49 : 27, 36]$.