

HW 9 HONR 209M. Morally DUE Tuesday Apr 28

Assume the cake is the interval $[0, 1]$. Assume the following:

Alice's tastes are uniform on $[\frac{1}{3}, 1]$. Multiplier: $\frac{3}{2}$.

Bob's tastes are uniform on $[0, \frac{9}{10}]$. Multiplier: $\frac{10}{9}$.

Carol's tastes are uniform on $[\frac{1}{5}, \frac{3}{5}]$. Multiplier: $\frac{5}{2}$.

1. (25 points) What intervals would be used to set this up as a linear programming problem? Draw the line from 0 to 1 and then mark off the intervals.
2. (25 points) What variables would be used to set this up as a linear programming problem?
3. (25 points) Write down the inequality that states that Alice gets at least $1/3$.
4. (25 points) Write down the inequality that states that Alice is not envious of Bob.