Econ 501A Final Exam

December 12, 2018

1. The exam questions are on the back of this page. Please wait before turning this page over.
2. You may rely without proof on mathematical results proven in 519 or other math sources.
3. Please do not rely without proof on results proven in the 501A problem sets, lectures, notes or MWG, unless otherwise noted. Relying without proof on such results will yield only partial credit.
4. $\ln(1) = 0,\ \ln(2) \approx 0.7,\ \ln(3) \approx 1.1$
5. Good luck! Don't be stressed. This final exam matters less than the comprehensive exam.

1. Consider a consumer choosing bundles of two goods. The grand set of alternatives is the two-dimensional positive orthant $X = \mathbb{R}^2_+$. Suppose the consumer's preference $\succeq$ over X is complete, transitive, continuous and strictly increasing. (a) Prove that there exists a utility representation of $\succeq$. In this part you may rely on the result which concludes that if $x^0 \prec y \prec x^1$, then there exists a mixture of x^0 and x^1 that is indifferent to y. If you do rely on that result, please state it more completely. (b) How many utility representations does $\succeq$ have?

2. Consider a consumer who has utility $u(x_1, x_2, x_3) = \frac{1}{3}(x_1 + x_2 + x_3)$. (Here there are three goods and x_i is the quantity of good i.) Initially the consumer has wealth $w = 4$ and prices are $p = (2, 3, 3)$. Suppose that prices change to $p' = (1, 3, 4)$. We have considered four different measures of the welfare effect of such a price change. Compute those four measures in this example, and briefly explain the meaning of each of those four measures in this example.

3. Consider a preference $\succeq$ over lotteries. Suppose that the preference has an expected utility representation. Show that the preference is complete, continuous, and transitive; and the preference satisfies the independence axiom.