ECON 845 Assignment #1 Fall 2022-2023

Due in class on Thursday, September 29, 2022

#1. Consider the insurance model of second-degree price discrimination (i.e., screening) we discussed in class. There are two types of consumers, type 1 and type 2. The proportions of type 1 and type 2 consumers are given by λ and $1-\lambda$ respectively. Each consumer has an initial income of I. With probability θ_i, a type i consumer has an accident and incurs a loss of L. A consumer has a utility function given by $U(x)$, with $U'(x) > 0$ and $U''(x) < 0$. An insurance company is risk neutral, and offers insurance plans (p, s) to these consumers, where p is the premium and s is the reimbursement in the case of accident.

Suppose that $I = 100$, $L = 50$, $U(x) = \ln x$, $\theta_1 = 0.3$, $\theta_2 = 0.5$.
(1) Solve for the optimal insurance plans for type 1 and for type 2 consumers respectively and separately when their type information is known.
(2) Solve for the optimal insurance plans (as a function of λ) when their type information is their private information.