1. Suppose a fast food restaurant would like to purchase veggie burger patties from a food distributor. The restaurant’s utility for the patties is given by \( S(q) = 1000\ln(1 + q) \). The fixed costs for the food distributor are $8,000, and if the distributor is inefficient (efficient) then its marginal costs are 0.10 (0.08). Assume that the restaurant believes that there is a 80% chance that the food distributor is efficient.

(a) What are the first-best production levels? (2 points)
(b) What are the contracts to implement the first-best production levels? (2 points)
(c) How much profit would the efficient distributor make if the restaurant offers a menu of contracts \( \{(q^I_1, t^I_1), (q^E_1, t^E_1)\} \)? (1 point)
(d) What are the second-best production levels? (2 points)
(e) What is the menu of contracts for the second-best production levels? (2 points)
(f) What is the information rent of the efficient distributor for the menu of contracts for the second-best production levels? Is this higher or lower than the profit gained for the menu of contracts for the first-best production levels? (2 points)