HW 9

1) Sarah's demand for routine medical visits is q = 10 - 0.2p when she is healthy and q = 20 - 0.2p when she is sick. Medical visits cost $50 each if Sarah has no medical insurance. She is sick 20% of the time. Sarah is considering two different insurance plans. One offers free medical visits; the other plan costs less up front but requires that Sarah pay $5 per medical visit. Compare the two plans in terms of the trade-off between risk and moral hazard.

   ANSWER

   At $50 per visit, Sarah makes no visits when she is healthy and 10 visits when she is sick. Under the first plan, she makes 10 visits when she is healthy and 20 visits when she is sick. Thus Sarah will make 10 more visits with the first insurance plan. Under the second plan, Sarah makes nine visits when she is healthy and 19 visits when she is sick. The moral hazard is greater (by one visit) under the first plan. Under the first plan, Sarah's risk is zero. She pays only the up-front premium regardless of her health. Under the second plan she will make (0.8 x 9) + (0.2 x 19) = 11 visits at $5 each. Her risk, as measured by the variance of her expenditures, is (0.8 x 100) + (0.2 x 1600) = 400. Thus the second plan is riskier for her but generates less of a moral hazard on her part.

2) The cost, c, of a college education that serves only as a signal of a high-quality worker is $20,000. The wage of a known high-quality worker, w_h, is $75,000. The wage for a known low-quality worker, w_1, is $50,000. For what value of the share of the work force that is of high quality, t, is a pooling equilibrium possible?

3) Sarah has the utility function U(x) = 1 - 1/x, where x is the present value of her lifetime income. Sarah is trying to select a career. If she goes into teaching, she will make x=5 with certainty. If she pursues acting, she will make x=400 if successful or x=2 if unsuccessful (and therefore ends up waiting tables). The chance of succeeding in acting is 1% if she pursues acting.

   a. Determine which career Sarah will choose. Is she choosing the career with the higher expected value? Explain.
   b. An acting career expert charges 0.01 to determine if a person will succeed at acting. By going to an expert, Sarah can choose the best career according to her skills. Assuming that the expert is able to correctly determine if Sarah will be a successful actor, will she pay for this service?

4) Suppose the external marginal cost of pollution is $MC_{External} = 5Q$ and the internal marginal cost is $MC_{Internal} = 10Q$. Further, assume the inverse demand for the product, *Q*, is given by $P = 90 - Q$.
   a. What is the socially efficient level of output?
   b. How much output would a competitive industry produce?

c. How much output would a monopoly produce?
d. Discuss three ways government can induce firms to produce the socially efficient level of output.

5) Sam is suing someone in court for $10,000. The probability that Sam will lose the case is 1/h where h is the number of hours that Sam's attorney works on the case. The lawyer charges $500 per hour if he is to be paid hourly, or he requests 20% of the settlement if he is to be paid on a contingency basis. Assuming both Sam and the attorney are risk-neutral wealth maximizers, is either contract efficient?