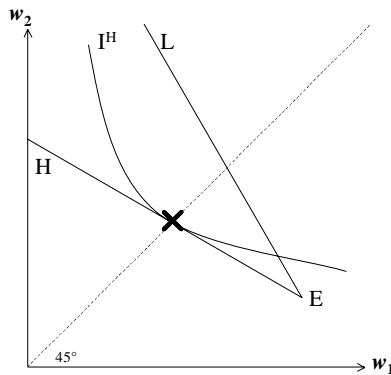


U8216 Microeconomics and Policy Analysis (Section 3)
Fall 2000
Final Review Problems

A reminder: These problems are intended to give you an idea of the style of questioning. They convey no information about the content of the exam.

1. There is a 0.95 probability that the value of Sal's portfolio will go up to \$625. There is a 0.05 chance that the value of his portfolio will go down by \$576. What is the expected value of Sal's portfolio? What is the expected utility of the portfolio?
2. Sal talks to his broker. He realizes that there is a 0.5 chance that the value of his portfolio remains unchanged at \$600.25. There is also a 0.5 chance that the value of his portfolio changes. If it changes, the values it could change to and their conditional probabilities are as given in the previous question. What is the expected value of Sal's portfolio and his expected utility?
3. The existence of insurance implies the existence of (circle all that apply):
 - a. Individuals who face risk and are risk averse.
 - b. Individuals who face risk and are risk neutral.
 - c. Individuals who face risk and are risk neutral.
 - d. Individuals who face risk and are fans of Ally McBeal.
 - e. Insurance companies that are risk loving.
 - f. Insurance companies that are risk neutral.
 - g. Insurance companies that are risk averse.
 - h. Insurance companies that are cigar lovers.
4. In the market for used cars, which type of cars will always find a market: the lemons (low quality used car) or the cream puffs (high quality used car)?
5. A high quality worker wants to distinguish himself from look alike low quality workers. When looking for a job, he tells his prospective employers that to prove his merits he has made a donation to a charity, and he shows them the receipt to prove it. Will this be a successful signal? Why or why not?
6. A production function defines the output that can be produced:
 - a. at the lowest cost, given the inputs available.
 - b. with the fewest amount of inputs.
 - c. if the firm is technically efficient.
 - d. in a given time period if no additional inputs are hired.
 - e. as technology changes over time.
7. Fixed costs are fixed with respect to changes in:
 - a. output.
 - b. capital expenditure.
 - c. wages.
 - d. price-cost margin

8. Please refer to the diagram below:



H: Set of feasible plans that an insurer can offer to a high-risk individual.

L: Set of feasible plans that an insurer can offer to a low-risk individual.

I^H : High-risk individual's indifference curve.

E: The endowment (no insurance) point.

The insurer offers all plans that lie on the lines H and L.

At the point \times , which one of the following statements is false?

- a. The individual prefers buying insurance to not buying insurance.
 - b. The individual purchases full insurance.
 - c. The individual cannot be made better off by switching to another plan.
 - d. The individual is more risk-averse than the insurer.
9. Which of the following is not associated with a shift from short-run to long-run production?
- a. The level of output increases.
 - b. The average cost of production decreases.
 - c. The quantity of capital input decreases.
 - d. The production function changes.
10. A firm that faces decreasing returns to scale:
- a. Will produce nothing in the long run.
 - b. Faces increasing marginal costs in the short run.
 - c. Faces increasing average costs in the long run.
 - d. Operates at a loss in the short run.
11. Sal hires a thousand monkeys from the San Diego zoo to play with typewriters. Their combined production of Shakespearean plays follows the function:
- $$S = \ln(h + 1)$$
- wherein S is the number of Shakespearean plays and h is the total number of hours spent typing. If the market price of each Shakespearean play is \$0.25 and Sal has to pay the monkeys \$0.01 for each hour they spend typing (combined), how many hours is he going to work the monkeys altogether? For this problem, treat all 1000 monkeys as a single input, i.e. you should not be multiplying or dividing by 1000 anywhere.
12. If a firm has a production function $Y = z_1^{1/2} z_2^{1/2}$ and input prices $w_1=1$ and $w_2=3$, find the input choice that minimizes the cost of producing 12 units of output.

13. If a firm has a production function $Y = z_1^{1/2} z_2^{1/2}$ and input prices $w_1=1$ and $w_2=3$, find its cost function.

14. Svevo owns a taxi. The production function for the taxi is $y=f(h,g)=1200^{1/2} h^{1/2} g^{1/2}$, where y is miles driven per day, h is hours of driver time per day, and g is gallons of gas per day. The maximum number of hours a day of driver time is 24.

a. Compute the marginal rate of technical substitution (MRTS) of Svevo's production process.

b. The wage rate for drivers is \$27 per hour; the price of gas is \$1 per gallon. If Svevo wants to produce some given number of miles, call it y_0 , then what is his demand for hours or drivers' time and gas as a function of y_0 ? i.e., solve for the conditional factor demands.

c. What is the cost function? i.e., given your solution to (b) what does it cost to produce y units of output at the going input prices if inputs are being used efficiently? What is the marginal cost?

d. The going price is \$0.45 per mile (i.e., the demand is horizontal at that price). Find how many miles Svevo's taxi supplies, his profits, how much gas he uses, and how many hours of drivers' time he uses.

15. Suppose that in a certain country there are three types of individuals, A, B, and C. Each individual has the same initial level of wealth of \$250, and a similar utility function, $U(w) = w^{3/4}$. Unfortunately, tornadoes are prevalent in this country and cause \$100 in property damage with certainty whenever they touch down. The probabilities that each type of individual will be affected by a tornado are the following:

Type	Probability of property damage by tornado
A	0.20
B	0.65
C	0.35

You can assume that *if* an individual buys insurance, then he or she buys full insurance.

a. A private insurance plan is put together. Managers of the insurance company cannot distinguish among types, and therefore assume all three types will join the plan in equal numbers. If managers calculate premiums according to the average probability that a tornado will hit, what premium will the company charge if they are risk neutral, have no costs other than damage claims, and expect to earn zero economic profits? The premium is paid regardless of the loss. If the loss occurs, the victim is fully compensated.

b. If the premium in (a) is charged, which type(s) of individual(s) will join the plan? What is the firm's expected profit (loss)?

c. If the insurance company decides to offer everyone insurance at the highest risk probability (i.e., behave as though everyone buying the policy is a type B), which types will buy the insurance? What is the expected profit (loss)?

d. If the insurance company decides to offer everyone insurance at the lowest risk probability (i.e., behave as though everyone buying the policy is a type A), which types will buy the insurance? What is the expected profit (loss)?