## Problem and solution essay

## ASSIGN BUSTER

Maximum Points: 60 Grade: Let $G$ be the smaller number between 6 and (achieved points+1 0)/10 Round G exactly to quarters of a grade to get your grade. Examples: 32 points give a 4 .

25, 31 points give a 4 Solution to Homework Set 1 Managerial Economics Fall 2011 Conceptual and Computational Questions 4 points 2. What is the maximum amount you would pay for an asset that gene- 2 pot for a rates an income of $\$ 150,000$ at the end of each of five years if the reasonable formula, opportunity cost of using funds is 9 percent?

The maximum you would be willing to pay for this asset is the present 2 mints for the value, which is correct result 150 , oho 150 , oho $2341++0$. 09) $(1+0.09)=\$ 583,447.69 .6$ points 3.

Suppose that the total benefit and total cost from an activity are, respectively, given by the following equations: $B(Q)=150+S Q C(Q) 100+$ SQ. (a) Write out the equation for the net benefits. Net benefits are $N(Q)=$ $50+$ SQ -? SQ . (b) What are the net benefits when $Q=1$ ? Q 5 ? Net benefits when 1 are $\mathrm{N} 20-5=65$ and when $\mathrm{Q} \mathrm{N}(5)=50+=25$.
(c) Write out the equation for the marginal net benefits.

Marginal net benefits are $\operatorname{MOB}(Q)=20-I Q$. D) What are the marginal net benefits when $Q=1$ ? $\mathrm{Q}=5$ ? -SQ and $=5$ they are Marginal net benefits when 1 are $\operatorname{MOB}(I)=20-10$ and when $Q-5$ they are $\operatorname{MOB}(5)=20-105=-$ 30. (e) What level of $Q$ maximizes net benefits? Setting $\operatorname{MOB}(Q)=20-I Q=$ $O$ and solving for $Q$, we see that net benefits are maximized when $Q=2$.
(f) At the value Of $Q$ that maximizes net benefits, what is the value Of marginal net benefits? When net benefits are maximized at $\mathrm{Q}=2$, marginal net benefits are zero. That is, 20-10 O. 1 point per correct result 4 points 4 .

A firm's current profits are $\$ 550,000$. These profits are expected to 2 points (1 for a grow indefinitely at a constant annual rate of 5 percent.

If the firm's formula, 1 for the opportunity cost of funds is 8 percent, determine the value of the firm: correct result) (a) The instant before it pays out current profits as dividends. The value of the firm before it pays out current dividends is $1.080 .08-0.05=\$ 19$. Million.

P Firm $=\$ 550$, $0(b)$ The instant after it pays out current profits as dividends. The value of the firm immediately after paying the dividend is 2 points (same as Ex-Dividend p firm 10 points $1.5550,000.08-0.05=$ \$19.

Million. Above) 7. It is estimated that over 90, 000 students will apply to the top 30 M. B. A.

Programs in the United States this year. (a) Using the concept of net present value and opportunity cost, explain when it is rational for an individual to pursue an M. B. A. Degree.

The net present value of attending school is the present value of the benefits derived from attending school (including the stream of higher earnings and the value to you of the work environment and prestige that your education provides), minus the opportunity cost of attending school.

As noted in the text, the opportunity cost of attending school is generally greater than the cost of books and tuition. It is rational for an individual to enroll in graduate when his or her net present value is greater than zero. 2 points (b) What would you expect to happen to the number of applicants if the starting salaries of managers with M. B.
A. Degrees remained constant but salaries of managers without such degrees increased by 15 percent? Why? Since this increases the opportunity cost of getting an M. B. A. , 2 points one would expect fewer students to apply for admission into 2 points M .

## B. A. Programs. 8.

Janet spends $\$ 20,000$ per year on painting supplies and storage space. She recently received two job offers from a famous marketing firm-? one offer was for $\$ 100,000$ a year, and the other was for $\$ 90,000$. However, she turned both jobs down to continue a painting career. If Janet sells 20 paintings per year at a price of $\$ 10,000$ each: 2 (a) What are her accounting profits? Her accounting profits are $\$ 180,000$. These are computed as the difference between revenues $(\$ 200,000)$ and explicit costs $(\$ 20,000)$. (b) What are her economic profits?

By working as a painter, Janet gives up the $\$ 100,000$ she could have earned under her next best alternative.

This implicit cost of $\$ 100,000$ is in addition to the $\$ 20,000$ in explicit costs. Since her economic costs are $\$ 120,000$, her economic profits are $\$ 200,000$ SSL 20, $000=\$ 80,000$. Problems and Applications 14. Tara is considering
leaving her current job, which pays $\$ 56$, 000 per year, to start a new company that manufactures a line of special pens for personal digital assistants. Based on market research, she can sell about 160, 000 units during the fritterers at a price of $\$ 20$ per unit.

With annual overhead costs and operating expenses amounting to \$3, 1 60, 000, Tara expects a profit margin of 25 percent. This margin is 6 percent larger than that of her largest competitor, Pens, Inc. (a) If Tara decides to embark on her new venture, what will her accounting costs be during the first year of operation? Her implicit costs? Her opportunity costs? Accounting costs equal $\$ 3,160,000$ per year in overhead and operating expenses. Her implicit cost is the $\$ 56,000$ salary that must be given up to start the new business.

