

Hendrik Wolff

ECON436

Problem Set 1, due Monday, April 20th

Make your answers as brief and concise as possible. The space provided in between the questions should be sufficient for your answers. In most cases one short sentence is enough. Correct but too lengthy descriptions will not obtain full points.

(a) Briefly describe: what is the main difference between “environmental economics” and “resource economics”. You can illustrate this with the help of a simple schematic figure, that was discussed in class (section 1 of Field and Field).

(b) What are renewable resources and how do they differ from non-renewable resources. What is the main feature that distinguishes between these. Discuss this **briefly**.

(c) There does not exist one uniquely agreed definition of “sustainability”. Describe what an economist might understand under the concept of “Sustainability”, both

(i) verbally

(ii) with the help of a simple schematic figure.

(iii) Now, describe shortly what a biocentrist might instead understand under sustainability.

(d) Draw an example of a function that is convex.

(e) Draw an example of a function that is concave.

(f) Draw an example of a set that is convex. Briefly describe the main feature of the property of a set that is convex.

(g) Draw an example of a set that is not convex and state why it is not convex.

(h) What is the difference between “instrumental value” and an “intrinsic value”.

a. Briefly describe that difference

b. For you personally, on a scale of 1 to 10, what is more important

Intrinsic is more important

both equally important

instrumental is more important

1

2

3

4

5

6

7

9

10

Note question b. and question c. will not be graded, there is no right and no wrong. Also question b is voluntary.

c. Now “ estimate” what is the statistical mean and the variance of your classmates answers for question b:

Mean:

Variance:

- (i) Given the model on the Economy and the Environment that was discussed in class (Chapter 2 of Field and Field): the question arose whether “residual” implies “pollution”: Give a real world example where “residual” does not imply “pollution”.
- (j) Is the following statement true: “the use of renewable resources is always environmentally friendly”? Indicate with “true” or “false”, and briefly (max. one sentence) state why you think this is true or false.
- (k) Is the following statement true: “the use of non-renewable resources necessarily leads to pollution.”? Indicate with true or false, and briefly (max. one sentence) state why you think this statement is true or false.
- (l) Given the model on the Economy and the Environment that was discussed in class (Chapter 2 of Field and Field), is it true, that $R_C = G$? If it is true, does it hold in the “short run”, or does it hold in the “long run” only?

(m) Given the model on the Economy and the Environment that was discussed in class (Chapter 2 of Field and Field), there exist four different strategies to reduce the impact of the quantity of residuals discharged.

- a. Name the four strategies.
 - 1.
 - 2.
 - 3.
 - 4.
- b. The strategy of “Zero Population Growth” would be an example of strategy that mainly reduces which material flow?
- c. Does “sectoral shift” necessarily reduce global pollution? Why yes, or why not. Justify your reasoning with half a sentence.

(n) Why are long lived, cumulative pollutants so much harder to manage than short lived, non-cumulative pollutants.

(o) Give an example of a “nonpoint-source pollutant”. Why is that more difficult to manage than a “point-source” pollutant?

(p) Define what it means if “ bundle Y is Pareto preferred to bundle Z” (i) in words, (ii) with the help of a figure. Indicate on the figure the set of all points that are both (a) feasible and (b) would be preferred to Z.

(q) Is the following statement true: If the government implements policies only that lead to Pareto preferred situations, would that imply that the policy decisions would be biased towards the current status quo? Why, or why not?

(r) World Population is constantly rising. New cities/suburbs must be built. Assume you are the major over an undeveloped piece of land where such a new city will be built.

- a. Discuss, by using a figure, how you would choose between Environmental Quality considerations (Q) and all other considerations (i.e. development of a lucrative, but potential polluting industry in the city).

- b. If all the people in the city are strict “Anthropocentrists”, could you then easily develop a political system where the Pareto criterion is satisfied?

 - c. If there are a few Biocentrists in your city as well, how will that influence the policy options of the major?

 - d. The nice thing about the “Potential Pareto” Criterion is, that, after a stream of payments (**Z**), everyone is at least as well off under the new *situation* (the new *situation* is that the city is built, containing a natural park to conserve some rare species AND the industry can settle down), and at least one person is actually better off. As we discussed in class, however, the management of the stream of payments **Z** can be very involved (and hence costly for you, the cities major). How could the Kaldor Hicks Criterion help the major?
- (s) Answer in Kolstad, Chapter 3, question 2 and 3 on page 45/46. Note that Kolstad uses the word “compensation principle” of what we (in class) have often referred to as the “Kaldor Hix” criterion.

BONUS QUESTION

- (t) Using EXCEL (or similar tabular program), answer question 6 in Kolstad