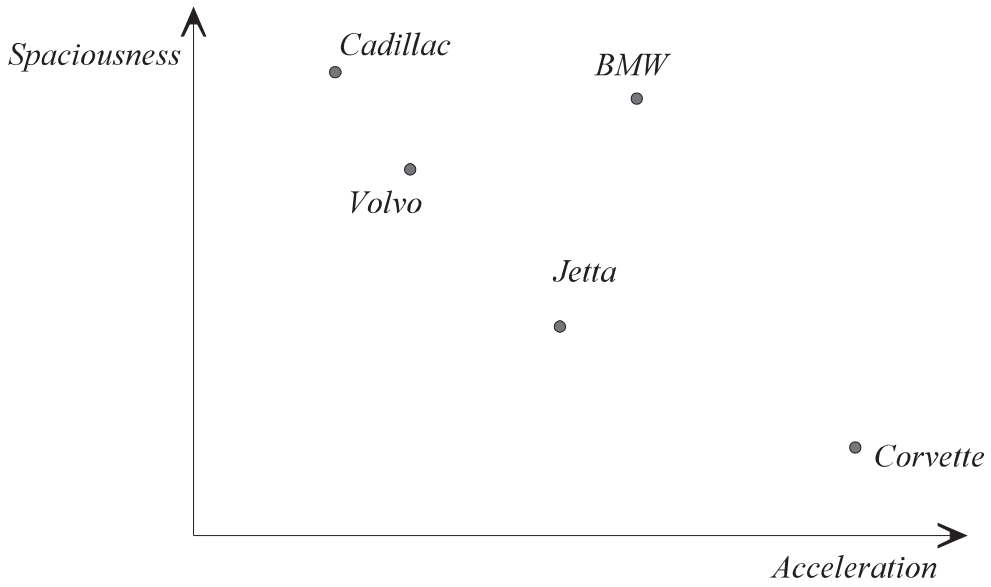
Short Questions

1. Consider the following 5 cars plotted in the following graph. Suppose that these cars are fully described by their spaciousness and acceleration, i.e., there are no other characteristics that affect a consumer's utility for them.



A particular consumer, who values Spaciousness and Acceleration, ranks these cars from most desirable to least desirable in the following way:

1. BMW

2. Jetta

3. Volvo

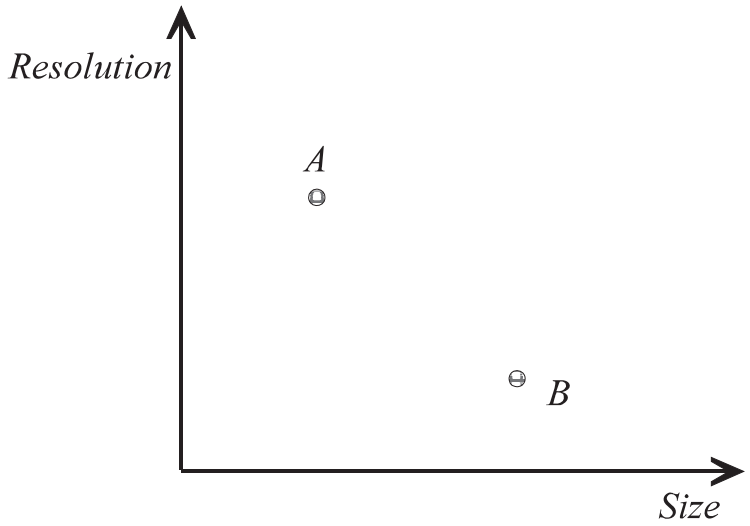
4. Corvette

5. Cadillac

In the above figure, draw a set of indifference curves that would be sufficient to describe the above ranking, and are also consistent with the fact that utility is increasing in both Spaciousness and Acceleration.

2. The two points in the figure below indicate the resolution-size combinations of two monitors. Both resolution and size a desirable properties: all things equal, consumers prefer monitors of bigger size and better resolution to monitors that are smaller and of poorer resolution.

Note: The "quantities" here are the level of Resolution and Size of the monitors, i.e., the goods are interpreted as being the attributes of the monitors.



a. Martha prefers monitor A to monitor B. In the figure above, draw an indifference curve that indicates this fact.

b. Alice prefers monitor B to monitor A. In the figure above, draw an indifference curve that indicates this fact.

c. Do the two indifference curves intersect?

d. Does this violate the requirement that indifference curves do not cross? Why or Why not?

3. Consider two students: Sarah and Jonathan. The utility function of Sarah for two goods *X* and *Y* is given by

$$U_S(X,Y) = \log(X) + 2\log(Y)$$

while the utility function of Jonathan for the same goods is

$$U_J(X,Y) = 5\log(X) + 10\log(Y)$$

Suppose that we give one unit of X and one unit of Y to both Sarah and Jonathan.

Do the utility functions above imply that Jonathan will be 5 times as happy as Sarah ?

Do they imply that Jonathan will be happier than Sarah, but we don't know by how much ?

What can we say, if anything, about how happy Jonathan will be relative to Sarah ?

In the space below answer (and briefly discuss) the above questions.

4. Consider a person with utility function

$$U = 2X^{\alpha}Y^{\beta}$$

and another person with utility function

$$V = 4X^{\alpha}Y^{\beta}$$

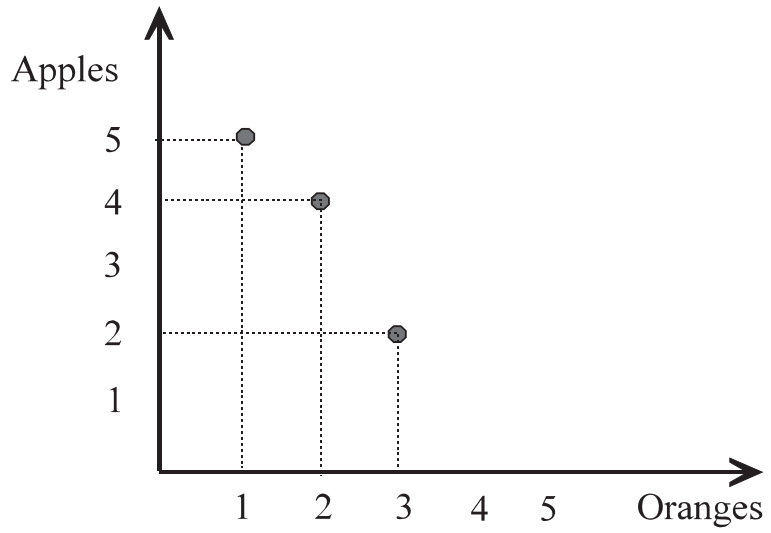
Discuss the following statement:

> "Relative to the first person, the second person is twice as happy to receive any particular combination of X and Y"

5. Apples and oranges are desirable products for both Rajiv and Elena. Moreover, Rajiv's and Elena's preferences for apples and oranges are characterized by diminishing MRS.

Rajiv prefers 4 apples and 2 oranges to 2 apples and 3 oranges. In the figure below draw an indifference curve that reflects this fact. Elena prefers 2 apples and 3 oranges to 5 apples and 1 orange. Draw an indifference curve that reflects this fact.

Label your indifference curves with the name of the person they correspond to.



A. According to the indifference curves, as you have drawn them above, does Rajiv prefer 5 apples and 1 orange to 4 apples and 2 oranges?

B. Are other possibilities consistent with the information as given in the problem statement above? If so, which are they?

Problems

1. Consider a person who reports the following preferences:

$$\begin{Bmatrix} 2 & CDs \\ 1 & DVD \end{Bmatrix} \succ \begin{Bmatrix} 3 & CDs \\ 0 & DVDs \end{Bmatrix}$$

and

$$\begin{Bmatrix} 3 & CDs \\ 2 & DVDs \end{Bmatrix} \succ \begin{Bmatrix} 0 & CDs \\ 3 & DVDs \end{Bmatrix}$$

Does the utility function:

$$U(CD, DVD) = CD^2 + 10\sqrt{DVD}$$

represent this consumer's preferences ?