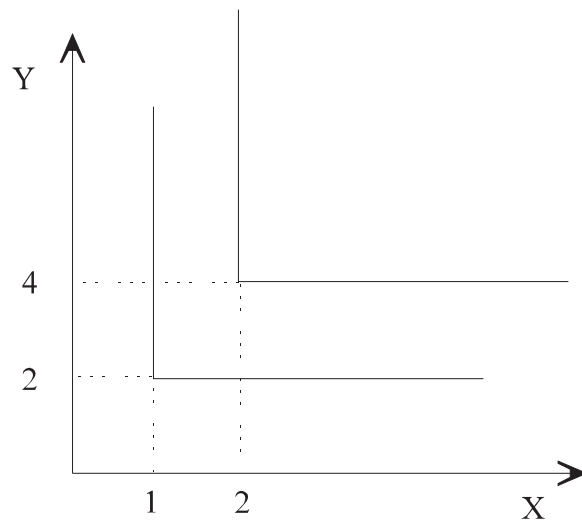**Short Questions**

1. Consider an individual whose preferences for goods X and Y are given by the following set of indifference curves.

a. Is the utility function of this person Cobb-Douglas, Leontieff, or Linear Utility?

b. Write the mathematical expression for the utility function of *this particular* consumer.

2. Consider a person with the following indifference curve between goods X and Y:
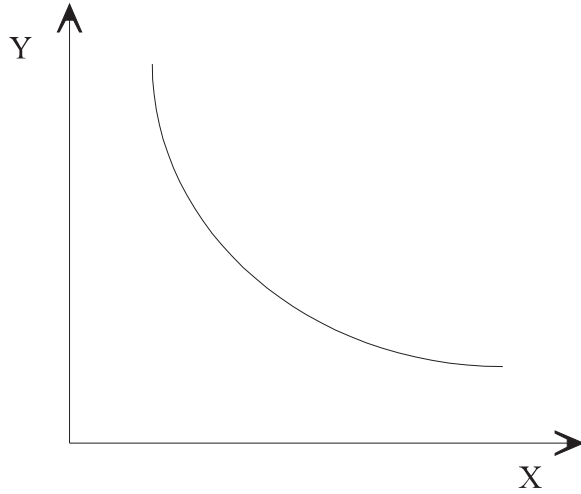
What does this indifference curve indicate for this consumer's preferences for X and Y?

In particular:

a. Are the two goods perfect substitutes?

b. Are they perfect complements?

c. Are they imperfect substitutes?

Problems

1. Consider the utility function $U(X, Y) = \log(X) + 2\log(Y)$.

a. What is the marginal utility of X? What is the marginal utility of Y?

b. What is $MRS_{Y,X}$? That is, how many units of X do I need to make up for a loss of one unit of Y?

c. Consider next the utility function $U(X, Y) = X Y^2$. What is $MRS_{Y,X}$ for this utility function.?

d. Do these two utility function represent the same preferences?

2. What is $MRS_{X,Y}$ for the Cobb-Douglas utility function $U(X,Y) = X^{\alpha}Y^{\beta}$? What is the $MRS_{X,Y}$ for the Linear Utility function $U(X, Y) = \alpha X + \beta Y$? Which one of these two utility function does NOT exhibit decreasing MRS ?