You are choosing between two goods, X and Y, and your marginal utility from each is as shown below. if your income is $9 and the price of X and Y are $2 and $1, respectively,

Units of X                       Marginal Utility for X

 1                                    10

  2                                     8

  3                                     6

  4                                     4

5                                     3

6                                     2

Units of Y                       Marginal Utility for Y

1                                    8

2                                    7

3                                    6

4                                    5

5                                    4

6                                    3

a) What quantities of each will you purchase to maximize utility?

b) What total utility will you realize?

c) Assume that, other things remaining unchanged, the price of X falls to $1. What quantities of X and Y will you now purchase?

d) Using the two prices and quantities for X (the demand for X when price is $1 and the demand for X when the price is $2) derives the price elasticity of demand for X.