HOMEWORK #2 (PART 1 OF 2)
Due Oct 7 IN CLASS
NO LATE SUBMISSION IS ACCEPTED
Please TYPE and STAPLE your work
Graphs and formulas can be drawn by hand
The number of points here sums up to 12.5
Second part of this homework will be given next week

QUESTION 2.1 (3 pts)
Suppose there is one good in the economy (and money) and the utility obtained from the good is $U(x) = \sqrt{x}$. Suppose also that the good can be consumed only in unit quantities (1, 2, 3,…).
   a. Find the marginal utility of the consumer for $x = 0, 1, 2, 3, 4$ and 5.
   b. Graph the demand of the consumer.
   c. Suppose the price of the good is $0.25. Calculate the consumer's surplus (you can either find the area under the demand curve or explicitly solve the maximization problem using calculus).

QUESTION 2.2 (3 pts)
Consumer 1 has demand curve given by P= 40-2Q.
Consumer 2 has demand curve given by P= 10-Q.
   a. Graph each consumer's demand curve.
   b. Find the aggregate demand curve and graph it.
   c. Derive the formula for the aggregate demand curve.
   d. What is the total consumer surplus when the price is P=20?

QUESTION 2.3 (1.5 pts)
Read about shifts of demand/supply curves in Chapter 3. Consider the market for *orange juice* in Minneapolis. For each of the following situations, clearly state what happens to equilibrium price and equilibrium quantity and why. Although it may help you to draw a picture, it is not required for full credit.
   a. A new study shows that orange juice improves your intelligence.
   b. More people move to Minneapolis and the price of oranges increases.
   c. The price of vodka (a complement to Orange Juice) increases and a new technology is discovered, which makes orange juice easier to produce.
   d. A new study shows that orange juice causes cancer and the price of tea in China falls.
   e. The price of grapefruit juice increases and more orange juice suppliers move to Minneapolis.

QUESTION 2.4 (2 pts)

Consider the market for Nintendo Game Cubes. Sketch a demand/supply diagram for the market for Nintendo Game Cubes. Label the equilibrium price and quantity on your diagram. You study survey data and observe that if Nintendo Game Cubes cost $100, then 20 Nintendo Game Cubes are demanded, while if Nintendo Game Cubes costs $200, only 15 Nintendo Game Cubes are demanded. You also observe that if Nintendo Game Cubes cost $150, then 50 Sony Playstation 2's are demanded and if Nintendo Game Cubes cost $200, then 75 Sony Playstation 2's are demanded. Calculate the Cross Price Elasticity of Demand for Nintendo Game Cubes and Sony Playstation 2's. How are these two goods related? Suppose the price of Sony Playstation 2's increases. Draw and label the effects of this shift on your diagram from above (for Nintendo Game Cubes). Label the new equilibrium price and quantity. In a sentence or two, explain why you changed your diagram in this manner. Explicitly state what happened to equilibrium price and quantity.

QUESTION 2.5 (3 pts)

At Bob's store, the price of one unit of good X is $20. Bob, the owner, is considering a price increase so that a unit of good X will be $30. Bob knows the price elasticity of demand for good X is –0.5 everywhere in this price range. Furthermore, Bob's store is the ONLY place to buy good X.

a. If Bob is trying to maximize his total revenue (P*Q), should Bob increase the price of X from $20 to $30?
b. Calculate the percent change in quantity demanded of good X as a result of this proposal.
c. If in 1 month Cindy's store begins to sell good X, what will happen to Bob's price elasticity of demand for good X? (That is, will it be more or less elastic?)