**Econ 4100 Homework I** [due date](http://milesfinney.net/410/schedule.html)

1. [In 2015, Governor Jerry Brown enacted mandatory restrictions on water use across California](http://milesfinney.net/410/article/water.pdf). The four hundred local water suppliers in the state must each reduce water use by 25%. The individual suppliers are expected to impose restrictions on water use for such activities as gardening and outdoor cleaning. Discuss and illustrate how the price system could be used to address the water crisis. Why isn’t the price system used?

2. Hurricane Sandy, which struck the east coast in October 2012, damaged or destroyed an estimated 305,000 housing units in New York State alone. If rent is the price of consuming housing, use supply/demand to show the effect the storm had on the housing market. Discuss the effect of emergency measures restricting rent changes in the aftermath of the storm.

3. Utilize the assumption that consumers' preferences are transitive and explain why indifference curves cannot intersect. Compare baskets A, B and C in [gra](http://milesfinney.net/410/home/g1.pdf)[ph 1](http://milesfinney.net/410/home/g1.pdf) to explain your answer.

4. Is it consistent to claim that (a) people's preferences differ and (b) at their current consumption levels, their marginal rates of substitution are equal?

5. Suppose Paula consumes both 87 and 89 octane gasoline. Assume that before the recent price increases, Paula paid $3.00/gallon for 87 octane and $3.10/gallon for 89 octane. The price of each grade of gasoline has now risen by exactly 65 cents. Make the argument that if the income elasticity of demand for gasoline is small, the price increase could induce Paula to consume *more* of the 89 octane gasoline and less of the 87 octane.

6. Explain what is wrong with the following statement. *"A decrease in supply will lead to an increase in the price, which decreases demand, thus lowering price. Thus, a decrease in supply has no effect on the price of a good."*

7. Suppose a person does not purchase internet access for her house. Illustrate her preference for internet (versus other goods) and budget constraint on a diagram. Show two scenarios: one in which she places no value on the good, the other in which she places little value. Does the fact that the consumer does not purchase internet access necessarily mean she places no value on the good? Explain.

8. Suppose a consumer's preferences can be represented by the utility function: U(X,Y)=X2Y

a. Derive the function for the marginal rate of substitution holding utility constant: 

b. Derive the demand curves for the two goods, X and Y.

c. Confirm that both demand curves slope downward.

d. Are both goods normal goods? Explain.

e. Calculatethe price elasticity for each of the goods.

f. Calculate the income elasticity foreach of the goods.

g. Does the fact that the cross-price elasticity is zero imply that the two goods are not substitutes?

9. Suppose a consumer's preferences can be represented by the utility function: U(X,Y)=XY3/4

a. Derive the function for the marginal rate of substitution holding utility constant: 

b. Derive the demand curves for the two goods, X and Y.

c. Confirm that both demand curves slope downward.

d. Calculatethe price elasticity for each of the goods.

e. Calculate the income elasticity foreach of the goods.

10. Suppose [graph 2](http://milesfinney.net/410/home/g2.pdf) represents a consumer's budget line for cell phone service.

a. What is causing the discontinuity (kink) in the budget line? What do you know about the price of phone service on the upper portion relative to the lower part of the budget line?

b. Illustrate and explain how it is possible for the consumer to maximize utility at two different points on her budget constraint in graph 2.

c. Suppose the price of cell phone service increased as the minutes used increased. Illustrate and explain why multiple equilibrium points should not occur in this case.

11. Suppose a consumer's preferences can be represented by the utility function: U(X,Y)=Y + X2

a. Derive the function for the marginal rate of substitution holding utility constant: 

b. Does the marginal rate of substitution fall as you go down the indifference curve? Explain.

12. Suppose a consumer's preferences can be represented by the utility function: U(X,Y)=Y + 3X.

a. Draw an indifference curve.

b. Under what conditions would the consumer consume good Y? Good X?

13. Represent this [pricing scheme by Albertson’s](http://milesfinney.net/410/home/pricing.jpg) with a budget line. Does the pricing cause a substantial discontinuity in the line? Can we make inferences regarding the part of the line the consumer will likely fall on?