Always show all your work, so that you can receive partial credit. An answer with no explanation will receive zero credit. Use extra pages if necessary, but make sure you clearly indicate where the rest of your answer is.

1. True or false and explain. Lori spends all her income on Texas Longhorn t-shirts and Astros tickets. Her demand curve for Texas Longhorn t-shirts is inelastic. If the price of Texas Longhorn t-shirts increases, she consumes fewer Astros tickets. Explain.

2. a. Briefly comment on the elasticity of demand for infertility treatment. Consider the things that determine elasticity and carefully state why you think the demand is elastic or inelastic.

   b. Based on your answer to part a, if the government taxes suppliers of infertility drugs, who would bear most of the burden and why?
3. Professors Haider and Deliere make up the entire demand side of the market for summer research assistants in the economics department. Professor Haider’s demand curve is $P = 60 - 2q_B$ and Professor Deliere’s is $P = 50 - q_L$, where $q_B$ and $q_L$ are the hours demanded Professors Haider and Deliere, respectively.

a. Graphically illustrate Professor Haider’s and Professor Deliere’s individual demand curves and the market demand curve for research assistants, carefully labeling all axes and significant points.

b. Algebraically describe the market demand curve. (Show your work!)

c. What is the price elasticity of demand for Professor Haider when the price is $10? Interpret your response.

d. What is the price elasticity of demand for Professor Deliere when the price is $10? Interpret your response.

e. At what price is Professor Haider’s price elasticity equal to -1?

f. At what price is Professor Deliere’s price elasticity equal to -1?

g. Where on the market demand curves is the price elasticity equal to -1? What is significant about this point?
4. In Truck City, Nebraska, there are two kinds of consumers, Ford owners and Dodge owners. Every Ford owner has a demand curve for gasoline \( P = 4 - \frac{1}{5}q_F \) for \( P \leq 4 \) and \( q_F = 0 \) for \( P > 4 \). Every Dodge owner has a demand function \( P = 5 - \frac{1}{3}q_D \) for \( P \leq 5 \) and \( q_D = 0 \) for \( P > 5 \). (Quantities are measured in gallons per week and price is measured in dollars). Suppose that Truck City has 150 consumers, 100 Ford owners and 50 Dodge owners.

a. If the price is $3, what is the total amount demanded by each individual Ford owner? (Show your work!)

b. If the price is $3, what is the total amount demanded by each individual Dodge owner? (Show your work!)

c. What is the total amount demanded by ALL consumers in Truck City at the price of $3? (Show your work!)

d. On the graph, draw the demand curve representing total demand by all Ford owners and label it: \( D_F \). Draw the demand curve representing total demand by all Dodge owners and label it: \( D_D \). Draw the demand curve representing the market curve for the whole town and label it: \( D_{\text{Market}} \).

\begin{figure}
\centering
\includegraphics[width=\textwidth]{graph.png}
\end{figure}

e. At what prices does the market demand curve have kinks?
f. When the price of gasoline is $1 per gallon, how much does weekly demand fall when price rises by 10 cents? (Show your work!)

g. When the price of gasoline is $4.50 per gallon, how much does weekly demand fall when price rises by 10 cents? (Show your work!)

h. When the price of gasoline is $10 per gallon, how much does weekly demand fall when price rises by 10 cents? (Show your work!)

5. A lemonade vendor faces a daily demand curve of \( Q = 1800 - 15P \), where \( P \) is the price of a lemonade in cents and \( Q \) is the number of lemonades purchased each day.

a. If the vendor has been selling 300 lemonades each day, how much revenue has she been collecting?

b. What is the elasticity of demand for lemonades at that price?

c. The vendor decides that she wants to generate more revenue. Should she raise or lower the price of her lemonades? Explain.

d. At what price would she achieve maximum total REVENUE?
6. The demand curve for distilled liquor is \( P = 27 - \frac{1}{2} Q^D \) and the supply curve is \( P = 3 + \frac{3}{2} Q^S \).

a. Graph the supply \( S_0 \) and demand \( D_0 \). Carefully label your axes.

b. **Algebraically** find the equilibrium price and quantity of distilled liquor. Label these \( P^* \) and \( Q^* \) on the graph.

c. The Federal Tax Administers publishes the tax rates on distilled liquor at the following website: http://www.taxadmin.org/fta/rate/liquor.html. Who is the statutory incidence on?

d. Write an equation for the new supply equation for producers, based on the tax per unit in Missouri. Draw this new supply curve and label it \( S_1 \).

e. **With the tax** what is the:
   - Equilibrium quantity?
   - Equilibrium price?
   - Price paid by consumers \( (P_g) \)
   - Price received by producers \( (P_n) \)
   - Government revenue?
   - Label these on the graph.

f. What is the exact share of the tax is paid by consumers? Producers? Show your work.

g. How would your answer to part f change if the statutory incidence was on the other side of the market?
7. (#4 from Chapter 5, page 182) The only video rental club available to you charges $4/movie/day. If your demand curve for movie rentals is given by \( P = 20 - 2Q \), where \( P \) is the rental price ($/day) and \( Q \) is the quantity demanded (movies per year, what is the maximum annual membership fee you would be willing to pay to join this club?

You might also try #2, #3, and #6 in chapter 5.
You might also try #1, 2, 3, 4, 5, 6, and 7 in Chapter 4