**Elasticity Problems from Mansfield "Managerial Economics"**
7th Edition, Chapter 2: Demand Theory, pages 56-69.

This only includes the problems that are appropriate for EC 600, Spring 2012.

1. The Dolan Corporation, a maker of small engines, determines that in 2008 the demand curve for its product is
$$P = 2{,}000 - 50Q$$
where P is the price (in dollars) of an engine and Q is the number of engines sold per month.
    a. To sell 20 engines per month, what price would Dolan have to charge?
    b. If managers set a price of $500, how many engines will Dolan sell per month?
    c. What is the price elasticity od demand if price equals $500?
    d. At what price, if any, will the demand for Dolan's engines be of unitary elasticity?

2. The Johnson Robot Company's marketing managers estimate that the demand curve for the company's robots in 2008 is
$$P = 3{,}000 - 40Q$$
where P is the price (in dollars) of a robot and Q is the number sold per month.
    a. Derive the marginal revenue curve for the firm.
    b. At what prices is the demand for the firm's product price elastic?
    c. If the firm wants to maximize its dollar sales volume, what price should it charge?

3. After a careful statistical analysis, the Chidester Company concludes the demand function for its product is
$$Q = 500 - 3P + 2P_r + 0.1I$$
where Q is the quantity demanded of its product, P is the price of its product, $P_r$, is the price of its rival's product, and I is per capita disposable income (in dollars). At present, P = $10, $P_r$ = $20, and I = $6,000.
    a. What is the price elasticity of demand for the firm's product?
    b. What is the income elasticity of demand for the firm's product?
    c. What is the cross-price elasticity of demand between its product and its rival's product?

4. The Haas Corporation's executive vice president circulates a memo to the firm's top management in which he argues for a reduction in the price of the firm's product. He says such a price cut will increase the firm's sales and profits.
    a. The firm's marketing manager responds with a memo pointing out that the price elasticity of demand for the firm's product is about -0.5. Why is this fact relevant?
    b. The firm's president concurs with the opinion of the executive vice president. Is she correct?

5. Managers of the Hanover Manufacturing Company believe the demand curve for its product is
$$P = 5 - Q$$

where P is the price of its product (in dollars) and Q is the number of millions of units of its product sold per day. It is currently charging $1 per unit for its product.

a. Evaluate the wisdom of the firm's pricing policy.
b. A marketing specialist says that the price elasticity of demand for the firm's product is -1.0. Is this correct?

6. (#10 in the book) The Schmidt Corporatioin estimates that its demand function is

$$Q = 400 - 3P + 4I + 0.6A$$

where Q is the quantity demanded per month, P is the product's price (in dollars), I is per capita disposable income (in thousands of dollars), and A is the firm's advertising expenditures (in thousands of dollars per month). Population is assumed to be constant.

a. During the next decade, per capita disposable income is expected to increase by $5,000. What effect will this have on the firm's sales?
b. If Schmidt wants to raise its price enough to offset the effect of the increase in per capita disposable income, by how much must it raise its price?
c. If Schmidt raises its price by this amount, will it increase or decrease the price elasticity of demand? Explain.