1. A new chemical cleaning solution is introduced to the market. Initially, demand is \( Q_D = 1000 - 2p \) and supply \( Q_S = 100 + p \). Determine the equilibrium price and quantity. The government then decides that no more than 300 units of this product should be sold per period, and imposes a quota at this level. How does this quota affect the equilibrium price and quantity? Show the solution using a graph and calculate the numerical answer.

2. Using the formula of elasticity, if the equation for the demand for cups is \( Q = 200 - 10p \), what is the elasticity of demand when \( p = 5 \) and when \( p = 15 \)?

3. Suppose demand for TV is estimated to be \( Q = 3000 - 5p + 10p_x - 2p_z + 0.1m \). If \( p = 80, p_x = 50, p_z = 150, \) and \( m = 30,000 \); answer the following questions:
   1. What is the price elasticity of demand?
   2. What is the cross price elasticity with respect to commodity \( x \)? Give an example of what commodity \( x \) might be.
   3. What is the cross elasticity with respect to commodity \( z \)? Give an example of what commodity \( z \) might be.
   4. What is the income elasticity?

4. Suppose a tax on beans of $.05 per can is levied on firms. As a result of the tax, the equilibrium price increases from $0.20 to $0.22. What fraction of the incidence falls on consumers? On firms? Suppose the supply elasticity is 0.6. What must the demand elasticity be?
5. Perloff, third edition: question 9 page 71

6. Perloff, third edition: question 13 page 71

7. Perloff, third edition: problem 16 page 71

8. Perloff, third edition: problem 18 page 71