1. Consider the statutory incidence of the U.S. personal income tax and payroll taxes. Given what you know about these, say whether the statutory incidence of the tax is progressive or regressive? Why? How might the economic incidence differ?

2. Consider the market for medical devices like MRI machines. As part of the Affordable Care Act, Congress passed a new excise taxes on such devices. The tax is an ad valorem tax equal to 2.3% of the sale price of the device. The tax is remitted by the importer or the manufacturer of the device. Assume that demand for medical devices is given by \( Q^D = 100,000 - 4.5P \) and supply is given by \( Q^S = \frac{P}{2} \).

   (a) Find the equilibrium in the medical device market before the tax. What is the market price and quantity?

   (b) Find the equilibrium in the device market after the tax began on 1/1/2013. What is buyer’s after tax price? The producer’s tax-exclusive price? Draw the market equilibrium showing how the tax is represented.

   (c) What is the economic incidence of the tax? How much of the tax burden is borne by the consumer?

   (d) Explain why the distribution of the burden is what you find it to be.

3. Assume that the Blue Agave, a monopolist in the tequila market in Murfreesboro, has a cost function of the form: \( C(q) = 10 + 2q + 0.5q^2 \). The (inverse) demand for the product is given by \( P(q) = 47 - q \). The local government levies a tax of $9 per bottle, to be paid to the city of Murfreesboro by the monopolist. Use a partial equilibrium model to analyze:

   (a) What is the market quantity and price?

   (b) The government levies a tax of $9 per unit, to be paid to the government by the monopolist. What is the new market price and quantity?

   (c) How much of the tax do the consumers bear? How much does the monopolist bear?

4. Suppose both supply and demand are linear: \( Q^D = a - bp \) and \( Q^S = c + dp \).

   (a) Find the equilibrium price (this will be a function of the parameters \( a, b, c, d \).

   (b) No suppose that a quantity tax with a constant rate for all units bought and sold is instituted in the market. Determine the new equilibrium prices \( p^e \) and \( p^d \) in the market. Solve for the amounts of the producer’s and consumer’s tax burdens.

   (d) When is the burden on the consumer larger than on the producer? What does this mean in economic terms (e.g. in terms of relative elasticities)?

5. Assume that labor supply is given by \( L^S = aw^\alpha \), where \( a \) and \( \alpha \) are some constants and \( w \) is the real wage rate. Now assume that labor demand is given by \( L^D = bw^{-\beta} \), where \( b \) and \( \beta \) are some constants. Using the partial equilibrium framework, find what the burden of the tax is on those supplying and those demanding labor. You can assume that the tax is paid by employers, so that, in the case of the tax, labor demand is: \( L^D = b(w + \tau)^{-\beta} \), where \( \tau \) is the tax rate on labor.