Problem Set #3
This problem set is designed to help you master the concepts and tools covered in class after the Midterm, and to prepare you for the coming Final Exam. The first question is focused on IRS and monopolistic competition. The second question builds on the lectures on trade policy to describe and help you understand the effects of quotas. There are also a few MC and TF questions.

The problem set, including all questions, is due at the day of the final exam.

A. Monopolistic Competition and Increasing Returns to Scale.
   a. Draw a graph representing the short-run autarky equilibrium for a representative monopolistically competitive firm which makes profits under increasing returns to scale. Label firms demand $d$. Use your graph, shade the area representing firm’s total costs.

   ![Diagram representing short-run autarky equilibrium](image1)

   The area representing total costs is $OQBC$.

   b. State what will happen to the demand for the representative firm in the long-run autarky equilibrium? Draw a graph capturing the long-run equilibrium for the firm. Make sure you draw the two different demand curves for the individual monopolistically competitive firm: $D/Na$, which is built on the assumption that all firms change their prices simultaneously, and $d'$, which is built on the assumption that the representative firm takes other prices as given.

   The demand for the representative firm will: (i) fall; and, (ii) become more elastic.

   ![Diagram representing long-run equilibrium](image2)
c. Describe the short-run trade equilibrium. In the short-run trade equilibrium, the representative firm at Home will produce ____more____ (more, less, same amount), charge _______lower_______ (lower, higher, same) prices, and _______incur losses____ (make economic profits, incur losses, have normal profits). Draw a graph to capture the short-run equilibrium.

d. Illustrate the long-run trade equilibrium: Draw a graph depicting the long-run autarky equilibrium and the long-run trade equilibrium for the representative firm. Label the autarky equilibrium A and the trade equilibrium T.

e. From consumers’ perspective, the two major gains from trade are _____more variety____ and _____lower prices____.
B. **Trade Protection Policy: Quotas.** Assume that there are two countries (Home and the rest of the world, ROW) that trade a representative product (Wheat). Also, assume that Home is a small country.

a. What is the difference between tariffs, quotas and voluntary export restrictions (VER) as trade policy instruments?

*All three are trade policy instruments. The difference is that tariffs are taxes on imports, while quotas and VERs are quantity limitations. Quotas are imposed by the importing country’s government, while VERs are imposed by the exporting country’s government. Tariffs generate revenues for the government, quotas may generate revenues for the government, and VERs do not generate revenues.*

b. Use simple supply and demand analysis to describe the autarky equilibrium for the representative product (Wheat) at Home.

![Supply and Demand Diagram](image)

As the world price $P_w$ is lower than the domestic price $P_a$, Home will benefit from free trade. Clearly indicate how each of the following three groups will be affected by opening up to free trade: consumers, producers, and the society as a whole.

![Supply and Demand Diagram with World Price and Domestic Price](image)

*As the world price $P_w$ is lower than the domestic price $P_a$, Home will be importing Wheat and domestic prices will fall. As a result, consumer surplus will increase by the*
area \((a+b)\). Home producers however will suffer losses: Producer surplus will decrease by the area \((a)\). The net effect on the economy is a gain in welfare represented by the area \((b)\).

d. Use a graph to trace the effects of a wheat quota on each of groups from part “c”.

As Home is a small country, it cannot affect world prices. Therefore, we will concentrate only on the Home market. The effects of a quota, according to which Home limits their quantity of imports to \(D2-S2\) (as opposed to \(D1-S1\), which are imports with free trade) are very similar to the effects of a tariff, which will increase domestic prices from \(Pw\) to \(Pq\). The main difference is that with the quota, there is no direct revenue collected by the domestic government. Different groups are affected by the quota as follows: Consumer surplus decreases by \((a+b+c+d)\). Producer surplus increases by \((a)\). There are no revenues for the government. The area \((c)\), quota rents (see below) may go as extra revenue for the exporter. The net effect for the economy is a decrease in social welfare by \((b+c+d)\), where \((b+d)\) is the deadweight loss as discussed in class. The portion “\(b\)” of the deadweight loss can be interpreted as production (efficiency) loss, as the government is essentially stimulating inefficient production at home, while the portion “\(d\)” is consumer loss, as less consumers are able to afford the good at the higher price.

e. Which area on your graph from “\(d\)” represents potential quota rents? How are those rents distributed in reality?

Potential quota rents are represented by the area “\(c\)” on the picture above. Very often the government issues quota licenses to local firms. If the government does not charge the local importers for the quota licenses, then the few privileged firms generate additional revenue equal to the area “\(c\)”, the quota rents. Thus, the net quota effect for the economy is the deadweight loss “\(b+d\)”. Alternatively, the government may auction the licenses to generate revenues in which case the quota rents will go to the government and they can use them for different purposes including re-election. Sometimes, the government is involved in rent-seeking. This is bad for the economy. Finally, the government may let the foreign country extract the quota rents via VERs.
3. Specific tariffs are
   (a) direct limits on the quantity of imports.
   (b) import taxes calculated as a fixed charge for each unit of imported goods.
   (c) import taxes calculated as a fraction of the value of the imported goods.
   (d) the same as import quotas.
   (e) the same as ad valorem tariffs.

4. If a good is imported into (large) country H from country F, then the imposition of a tariff in country H
   (a) raises the price of the good in both countries.
   (b) raises the price in country H and cannot affect its price in country F.
   (c) raises the price of the good in H and lowers it in F.
   (d) lowers the price of the good in H and could raise it in F.
   (e) lowers the price of the good in both countries.

5. T/F _FALSE_ Tariffs always hurt the nation that uses them as well as its trading partners.

6. T/F _FALSE_ If a good is imported into (small) country H from country F, then the imposition of a tariff in country H raises the price of the good in both countries.