1) Market equilibria.
   a) Draw and label the industry demand (D) and an upward sloping supply curve (S) for a competitive market.
   b) Indicate the equilibrium price ($P_c$) and quantity ($Q_c$).
   c) Now draw the equilibrium price ($P_m$) and quantity ($Q_m$) for a monopolist assuming the same industry demand and supply curves.
   d) Label the lost consumer’s surplus as (LCS), the lost producer’s surplus as (LPS), and the redistribution from the consumer to producer (as REDIST), when the market changes from a competitive one to a monopoly.
2) Sherman and Clayton Acts.
   a) State sec. 1 of the Sherman Act?

   b) State the three prohibitions of the Sherman Act, sec. 2?
      i) 
      ii) 
      iii) 

   c) The Clayton Act outlaws three activities
      i) Specify two types of illegal exclusionary activities:
      ii) Provide 4 unique elements to the definition of price discrimination

   iii) What three types of mergers are possible? Define each briefly.
d) How did pre-Alcoa decisions regarding the definition of what constituted a violation of the Sherman Act differ from the Alcoa definition?

e) What is the two-pronged test of monopoly power?
   i)  
   ii)
3) Cartel Instability.

(a.) Complete the following model that illustrates why a cartel is inherently unstable. The average and marginal cost for each of \(n\) competitive firms is drawn in fig. 1 and the sum of all firm’s marginal costs (\(\sum_{i} MC_i\)) is drawn in fig. 2 along with the aggregate demand curve, D. First, determine and label the competitive price and quantity as \(P_c\) and \(Q_c\). Extend \(P_c\) to the left until it intersects the MC curve in fig. 1. Label the output by the typical competitive firm as \(q_c\). Now assume that the industry becomes a cartel. Draw in MR in fig. 2, and label the profit-maximizing output for the industry as \(Q_m\) and the required output for each firm in the cartel as \(q_m\) so that \(nq_m = Q_m\). Indicate the industry price as \(P_m\) and extend a horizontal line to until it intersects MC in fig. 1. Now in fig. 1, label how much the cartel firm would wish to produce if cheating is not punished and does not cause \(P_m\) to fall. Label this amount as \(q_{\text{cheat}}\). If all cartel firms produce this amount, to what level does total output of the cartel expand?

(b.) What forces external to the cartel will act to reduce its monopoly power?
4) I have started off the model of the dominant firm and competitive fringe.
   a) Derive the residual demand curve and the residual marginal revenue curve for the
dominant firm.
   b) Indicate optimal output as $Q_d$ and price $P_d$ for the dominant firm.
   c) Extend $P_d$ to the left and indicate profits for each member of the competitive
fringe.
   d) Label this rectangle as $\pi_f$.
   e) Does the dominant firm wish to eliminate the competitive fringe?

                  Why?

   f) Does the competitive fringe wish that the dominant firm were not around?

                  Why?
5) Derive the Cournot reaction curves for two firms given the following demand and marginal costs.

a) To do this, in fig. 1, solve graphically for the competitive output level and for the monopoly output level.

b) In fig. 2 draw in the reaction curves for the two firms using the competitive and monopoly output levels just determined in fig 1.

c) Label each curve.

d) Label the Cournot equilibrium.

e) Rank total Cournot output ($Q_{Cournot}$) compared to under monopoly output ($Q_{M}$) and competitive output ($Q_{Comp}$)?

f) Rank equilibrium Cournot price ($P_{Cournot}$) compared to under monopoly price ($P_{M}$) and competitive price ($P_{Comp}$)?

g) In the Cournot model, what assumption does each firm make about the production of the other firm?
6) Stackelberg Model:
   a) Is this more realistic than Cournot? Why?

   b) The leader is firm 1 and the follower is firm 2. I have drawn the reaction curve for the follower (firm 2) in panel b). Using the competitive and monopoly output levels obtained in question 5, apply these to the reaction curve where it intersects the x and y axes.

c) I have also drawn in Aggregate Demand and the residual demand curve for the leader (firm 1) in panel a) and label it $D_r$.

d) Derive firm 1’s residual marginal revenue curve and label it $MR_r$.

e) Indicate the optimal output for firm 1 and firm 2 as $q^*_1$ and $q^*_2$. The production of firm 1 equals the production in what market?

   f) Rank production under perfect competition ($Q_{Comp}$) compared to total production under Stackleberg ($Q_S$), production under monopoly ($Q_M$) and total production under Cournot ($Q_{Cournot}$).

   g) Rank price under perfect competition ($P_{Comp}$) compared to price under Stackleberg ($P_S$), price under monopoly ($P_M$), and price under Cournot ($P_{Cournot}$).

   h) Rank profits under perfect competition ($\pi_{Comp}$) compared to price under Stackleberg ($\pi_S$), price under monopoly ($\pi_M$), and price under Cournot ($\pi_{Cournot}$).
7) Demand and Supply Experiment Under Competition:
   a) What percent of participants engaged in a trade?
   b) On a supply curve, all producers have the same marginal cost—true or false (circle one).
   c) On a demand curve, all buyers have the same willingness to pay—true or false (circle one).
   d) Buyers must pay more than their maximum willingness to pay and sellers must receive less than their marginal cost—true or false (circle one).