Suppose there is a market with demand $q = 1000 - 5p$. All firms in the market have the same cost function $c(q) = 10q + 100$. The firms compete in Cournot oligopoly.

A) Write down the profit function of firm i in terms of q_i (firm i's quantity) and Q_{-i} (the quantity of all other firms except i).

B) Find firm i's optimal quantity in terms of Q_{-i}. That is, find i's best response function.

C) Assume all firms produce the same quantity q^*. What is the equilibrium quantity in this market when there are N firms?

D) What is the market quantity, market price, and profit of each firm when there are $N = 18$ firms?

E) What is the quantity and price under a monopoly?

F) How much more consumer welfare is there under the 18 firm oligopoly competition than under monopoly? (Hint: *area under inverse demand but above price*).