

Exercises for L3 and L4:

1.6. Consider the Cournot duopoly model where inverse demand is $P(Q) = a - Q$ but firms have asymmetric marginal costs: c_1 for firm 1 and c_2 for firm 2. What is the Nash equilibrium if $0 < c_i < a/2$ for each firm? What if $c_1 < c_2 < a$ but $2c_2 > a + c_1$?

1.7. In Section 1.2.B, we analyzed the Bertrand duopoly model with differentiated products. The case of homogeneous products yields a stark conclusion. Suppose that the quantity that consumers demand from firm i is $a - p_i$ when $p_i < p_j$, 0 when $p_i > p_j$, and $(a - p_i)/2$ when $p_i = p_j$. Suppose also that there are no fixed costs and that marginal costs are constant at c , where $c < a$. Show that if the firms choose prices simultaneously, then the unique Nash equilibrium is that both firms charge the price c .

1.9. What is a mixed strategy in a normal-form game? What is a mixed-strategy Nash equilibrium in a normal-form game?

1.12. Find the mixed-strategy Nash equilibrium of the following normal-form game.

	L	R
T	2, 1	0, 2
B	1, 2	3, 0

1.13: Show that there does not exist a mixed strategy equilibrium in the Prisoners' Dilemma Game.