

Information Economics, Fall 2015

Pre-lecture Problems for Lecture 2

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Note. The deadline of submitting the pre-lecture problem is *9:20am, September 21, 2015*. Please submit a hard copy of your work to the instructor in class. Late submissions will not be accepted. Each student must submit her/his individual work. Submit **ONLY** the problem that counts for grades.

- (0 points) Find all the pure-strategy Nash equilibria in the following static game:

		Player 2		
		L C R		
Player 1	T	2, 4	3, 7	5, 3
	M	4, 5	2, 0	2, 5
	B	3, 5	2, 4	6, 6

- (0 points) Consider the following dynamic game between two players. In stage 1, player 1 chooses a number $y \in \{-2, -1, 0, 1, 2\}$. If player 1 chooses an odd number, player 2 chooses a number $x \in [\frac{1}{2}, 1]$; otherwise, player 2 chooses a number $x \in [-1, -\frac{1}{2}]$. In any case, player 2's payoff is xy , and player 1's payoff is $2 - xy$. Find the equilibrium behaviors and payoffs of the two players.
- (10 points) Recall the supply chain pricing problem discussed in the videos. Still assume that $A = B = 1$ and $C = 0$. Suppose there are three firms in the supply chain, a manufacturer, a wholesaler, and a retailer. The manufacturer first charges the wholesaler a unit price w_1 , the wholesaler then charges the retailer a unit price w_2 , and lastly the retailer charges consumers a unit retail price r . Find the equilibrium outcome. Prove or disprove that $w_1^* < w_2^* < r^*$, where w_1^* , w_2^* , and r^* are the equilibrium prices charged by the manufacturer, wholesaler, and retailer. Give economic interpretations to support your mathematical conclusions.