• Do not forget to write your full name and student number on the top.
• Turn off your cell phone and put it away.
• Put away all your lecture notes, books, etc.
• There are 3 questions and 9 pages in the exam. Make sure you have them all.
• Please answer all of the questions in the space provided for each question.
• Show your work.
• You have 110 minutes.

GOOD LUCK!!
1. (34 pts) Suppose there is a dominant firm called Mosbius Designs, which is producing and selling a good at a fixed marginal cost, $c > 0$. There is also a competitive fringe producing the same good, who takes the price set by Mosbius Designs as given. The market demand is given by $Q(P) = 1/p^2$. The fringe has a supply function given by $Q_s(P) = \bar{Q} > 0$. Suppose the Lerner index for Mosbius Designs is given by $L = 1/3$.

(a) (10 pts) Find the price Mosbius Designs picks in terms of $c$.

(b) (10 pts) Find $\bar{Q}$ in terms of $c$. (Hint: $L = \frac{sd}{sd + |\epsilon_D|}$ for a dominant firm with a fringe.)
Now, suppose Mosbius Designs somehow drives the fringe out of the market and becomes the only producer. Suppose Mosbius Designs can charge only one price.

i. (7 pts) Find the optimal price in terms of $c$.

ii. (7 pts) Find the Lerner index. For what values of $c$, if any, this Lerner index is higher than the one given for parts (a) and (b)?
2. (64 pts) Suppose a publishing company, Stinson Publishing, is about to publish two new books: The Bro Code and The Playbook. Stinson Publishing is aware of the fact that there are three groups of readers: in the first group there are 120 readers and each one values each book at 30TL, in the second group there are 100 readers and each one values The Bro Code at 5TL and The Playbook at 40TL, and in the third group there are 80 readers and each one values The Bro Code at 20TL and The Playbook at 5TL. Each reader needs only one unit of The Bro Code and only one unit of The Playbook. Suppose Stinson Publishing has no fixed cost, but has a marginal cost of \( c = 10 \text{TL} \) for each book.

(a) (10 pts) Suppose Stinson Publishing bundles the two books and sells the bundle only. Find the optimal bundle price.
(b) (12 pts) Suppose now, Stinson Publishing sets a price for each book and a price for the bundle and sells them both separately and as a bundle. Find the optimal prices.

(c) (6 pts) Which of the options in part (a) and (b) brings more profit to Stinson Publishing? Provide intuition.
Now, suppose Stinson Publishing decides to sell The Bro Code to the bookstores rather than selling directly to the readers. There are three bookstores demanding The Bro Code. The first bookstore’s demand function is $Q_1(p)$ given by 50 as long as price is less than 30 TL, otherwise 0. The second and the third bookstores have demand functions given by $Q_2(p) = 120 - p$ and $Q_3 = 80 - p$, respectively. Suppose Stinson Publishing cannot observe which demand function belongs to which bookstore.

i. (12 pts) Suppose Stinson Publishing decides to offer a pricing scheme $(A, p)$ where $A$ is a fixed fee to be paid by the bookstore and $p$ is the unit price for the book The Bro Code. Each bookstore observes $(A, p)$ and decides how many copies to buy. Find the optimal $(A^*, p^*)$. 
ii. (24 pts) Now, assume \( c = 0 \) and suppose Stinson Publishing decides to offer three quantity and total payment combinations: \((T_1, q_1), (T_2, q_2)\) and \((T_3, q_3)\), where \((T_i, q_i)\) is targeted at the bookstore with demand \(Q_i\). Each bookstore observes the three offers and accepts one of them or does not accept at all.

(ii.a) (11 pts) Suppose \((T_1, q_1)\), with \(q_1 = 50\), extracts all of the consumer surplus of the bookstore with demand \(Q_1(p)\). Find the optimal \(T_2\) and \(T_3\) if \(q_2 = 120\) and \(q_3 = 80\).
(ii.b) (11 pts) Suppose \((T_3, q_3)\), with \(q_3 = 80\), extracts all of the consumer surplus of the bookstore with demand \(Q_3(p)\). Find the optimal \(T_1\) and \(T_2\) if \(q_1 = 50\) and \(q_2 = 120\).
(ii.c) (2 pts) Which of the options in part (ii.a) and (ii.b) brings more profit to Stinson Publishing? Provide intuition.

3. (2 pts) What were the two movies we picked in class when we were discussing ‘bundling and tying’?