

The last one!

Place your name on the back of this sheet of paper and nowhere else. Staple your answers on the front of this sheet of paper. Failure to follow these directions will cost you 1 point. Your assignment will be typed, except graphs can be drawn by hand and mathematical equations can be done by hand. Failure to type it will cost you 10 points. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

- 1) (5 points) Use calculus, to prove that $MR=MC$ is profit maximizing.
- 2) (35 points) Draw a firm's D/MR/ATC/AVC/MC/S diagram with a scale on the horizontal axis so you can estimate quantities. Beside it draw the industry supply curve assuming there are 4 firms in the industry. Explain how you got the firm and industry short-run supply curves. Make sure you point out the important points on the graphs showing both the price and quantity for the points. Make sure you have at least three points on the two supply curves.
- 3) (30 points) Draw the D/MR/ATC/AVC/MC/S diagram for a perfectly competitive firm whose demand is above the minimum of the ATC. Use it to find the quantity produced, the price charged, the average total costs, average variable costs, profits and marginal costs of producing that quantity. Briefly explain how you found each.
- 4) (10 points) Explain the difference between *producer surplus* and *profits*.
- 5) (20 points) Draw the TR/TR/Π diagram. Explain how you found Π, including its starting point, where it equals zero and its maximum point.