Econ 393 Quiz 1

Instructions: You need paper (lined if possible), a ruler and a pen or a pencil to write this quiz. You may answer the questions in any order you like. You should start each question on a new page. You must write your answers; typed answers will not be accepted. When you are finished answering the questions, please order the pages so your answers to question 1 are first, then your answers to question 2, etc. Then, in a single email message, send an image of each page to me at jburbidg@uwaterloo.ca. Please put Econ 393, your name and your id number in the subject line of your email. The deadline for submitting your answers is 6:00 pm Tuesday May 19th, Toronto time. The marks allocated to each question are shown in brackets.

1. (4 marks for each part of this question) Look at the file labeled “Assignment 1 pictures” on my web site. As precisely as you can, produce the corresponding picture for case (i) — the long-run equilibrium for perfect competition; case (ii) — monopoly with no price discrimination; and case (iv) — monopsony with no price discrimination; for the following setting:

   Firm/plant total cost is \( c(y) = y^2 + 1 \)
   Market demand is \( Y(p) = 600 - 100p \)

As in assignment 1, assume the number of firms/plants does not change moving from the long-run competitive equilibrium to monopoly or monopsony. Your pictures should have all the labeling, and the appropriate numbers for this new setting. I made you turn your heads sideways to read Figures (i), (ii) and (iv) in the Assignment 1 pictures. I am happy to do the same for you.

2. (2 marks for each part of this question) (i) In question 1 above, what would prices be if the monopolist were able to practice perfect price discrimination?
   (ii) In question 1 above, what would prices be if the monopsonist were able to practice perfect price discrimination?

3. (2 marks for each part of this question) Suppose a monopolist faces a linear market demand

   \[ Q(p) = a - bp, \]

1
where $Q$ is its output, $p$ is the price it sets, and $a$ and $b$ are positive numbers. Further, assume its total cost is

$$C(Q) = cQ, \ c > 0, a > bc$$

Assume this monopolist is unable to practice any form of price discrimination. (i) Write average revenue and marginal revenue as functions of $(Q, a, b)$. (ii) Assuming the monopolist chooses $Q$ to maximize its profits write the formula for $Q$ as a function of $a, b$ and $c$. 