

7. (10 points) The University has made an agreement with the Student Government Association to sell more student season football tickets. The tickets will cost \$150 each for the first 20,000 tickets. After 20,000 have sold, students will sign up for tickets. For each additional student (over 20,000) that signs up, the season price will be reduced by \$0.01 (yes, one cent) per student. A maximum of 35,000 total student tickets will be set aside. Students may sign up for tickets until August 20th. Effective on August 21st, the additional students may pick up their tickets at the reduced rate that has been determined by the number of students who had signed up by August 20th.

(a) What total number of student sales maximizes the university's revenue from student season football tickets? Show your work. [For full credit, you must show the function(s) you use for this problem. Just plugging numbers into a table will not suffice. In addition, show evidence of the use of calculus to find your answer—not merely a graph. State clearly what any variables in your function(s) represent.]

(b) What is the maximum revenue from student season ticket sales (based on this problem)?

(c) How many additional (i.e., over 20,000) season tickets would be optimal financially from the students' point of view? (Consider here only the students over the initial 20,000.) Explain.