

**University of Ottawa**  
**ECO 3145 Mathematical Economics I**  
**Fall 2019, Professor Shiell**

**Quiz I**

Total points: 16

1. As a consultant to the *Journal of Important Stuff*, you must determine the effect on sales of the number of pages devoted to economics (E) and the number of pages devoted to other subjects (A). After careful study, you have decided that the relationship between sales (S) and the allocation of pages is given by the following function:

$$S = 100A + 310E - \frac{1}{2}A^2 - 2E^2 - AE$$

- a.) (10) If the goal is to maximize sales, what will be your recommendation regarding the allocation of pages between economics and other subjects? Use Cramer's Rule in your solution. Show all your work.
- b.) (8) Prove that you have achieved a local maximum. Show all your work and explain your result.