

科目：微積分

系所組：企業管理學系管理學碩士班乙組

Notice: Please list your computation in details on answer sheet; scientific or financial calculators can not be used; round off to 4th decimal place.

1. An automobile dealership finds that the number of cars that it sells on day x of an advertising campaign is $S(x) = \sqrt{x}$.
 - (a) Find $S'(x)$ by using the definition of the derivative. (8%)
 - (b) Use your answer to part (a) to find the instantaneous rate of change on day $x = 1$ and interpret your answer. (6%)
 - (c) Use your answer to part (a) to find the instantaneous rate of change on day $x = 3$ and interpret your answer. (6%)
2. A bank offers 7% compounded continuously. How soon will a deposit:
 - (a) triple (10%) (b) increase by 25% (10%)
3.
 - (a) $\int \frac{\ln(2x)}{x} dx$ (10%)
 - (b) $\int_{\ln 2}^{\ln 5} e^x dx$ (10%)
4.
 - (a) $\int_0^1 x^2 e^{-x} dx$ (10%)
 - (b) The Lorenz curve for total wealth in the United States for 2006 was approximately x^9 . Please calculate the Gini index. (10%)
5.
 - (a) $\int_0^{\ln 2} \frac{e^{2x}}{1+e^{2x}} dx$ (10%)
 - (b) $\int_0^3 x\sqrt{1+x} dx$ (10%)

※ 注意：1. 考生須在「彌封答案卷」上作答。

2. 本試題紙空白部份可當稿紙使用。

3. 考生於作答時可否使用計算機、法典、字典或其他資料或工具，以簡章之規定為準。