淡江大學97學年度轉學生招生考試試題

系別：商管組二年級　　科目：微　積　分

可否使用計算機			
可		否	✓

本試題共 3 大題， 1 頁

一、 填充題(每小題8分,共80分)

請按題號依序作答,並註明題號。祇須寫答案,不必寫出過程

1. $\lim_{x\to 1}\frac{x-1}{\sqrt{x+3}-2}=$ ____。
2. The equation of the tangent line to the curve $y=x^3-x$ at the point$(-1,0)$ = ____。
3. The area of the region that is bounded by $y=\sqrt{x}$，$y=x-2$ and the x-axis = ____。
4. $\int\frac{7x-3}{2x^2-x-3}dx$ = ____。
5. $\int xe^{3x}dx$ = ____。
6. $\frac{d}{dx}e^{3x^3}$ = ____。
7. A sum is invested at 15% compounded continuously. How long will it triple? ____。(註: $\ln 3=1.0986$)
8. A furniture showroom expects to sell 250 sofas a year. Each sofa costs the store \$300, and there is a fixed charge of \$500 per order. If it costs \$100 to store a sofa for a year, how often should orders be placed to minimize inventory costs? ____。
9. A store can sell 20 bicycles per week at a price \$400 each. The manager estimates that for each \$10 price reduction she can sell two more bicycles per week. The bicycles cost the store \$200 each. Find the price of the bicycles and quantity that maximize profit? ____。
10. Suppose that $r(x)=9x$ and $c(x)=x^3-6x^2+5x$ represent the revenue and cost function, respectively, where x represents thousands of units. The production level that maximize profit = ____。

計算題(每題10分) 必須列出過程，否則不予計分

二、 Sketch the graph of $y=x^4-4x^3+10$, identify the extrema points and inflection points.

三、 Evaluate $\int_0^\infty e^{x^2}dx$。