國立臺北大學 106 學年度碩士班一般入學考試試題

系（所）組別：財政學系

科　　目：微積分

☑可 ☐不可 使用計算機

每題 10 分。

1. Consumers are willing to buy 70 light bulbs at a price of 50 cents a piece and are willing to buy 30 light bulbs for 70 cents each. What is the highest price consumers are willing to pay for a light bulb, assuming a linear demand function?

2. Solve the equation for x: $10^{\log(2x+1)} = \ln 2$

3. Evaluate $\lim_{x\to\infty} \frac{2x^2-7}{6-3x^2}$

4. Find the derivatives: $y = \frac{t^2-1}{t^3+1}$

5. Find the derivatives: $y = 3\cdot\ln x - 4\cdot\log_4 x$

6. Find the indefinite integral $\int t^2(t+1)^7\,dt$

7. Find the indefinite integral $\int_0^1 (x^2-1)(x^3-3x+5)^3\,dx$

8. A company has found that their revenue function, in thousands of dollars, is closely modeled by the function $R(x) = -0.05x^2 + 10x - 350$ for $0 \le x \le 185$ where x is the number of individual units sold. How many units must the company sell to maximize their revenue?

9. For what values of x do the following power series converge? $\sum_{n=0}^{\infty} n!x^n$

10. Find the absolute minimum value of $f(x) = x^{2/3}$ on the interval [-2, 3].

試題隨卷繳交