

科目：微積分

適用：經濟系(經濟分析組)

考生注意：

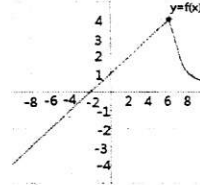
1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

本 試 題
共 1 頁
第 1 頁

編號：213

1.(20%) Use the graph of the function f to find $\lim_{x \rightarrow 6^-} f(x)$,

$\lim_{x \rightarrow 6^+} f(x)$ and $\lim_{x \rightarrow 6} f(x)$ if the limit exists.

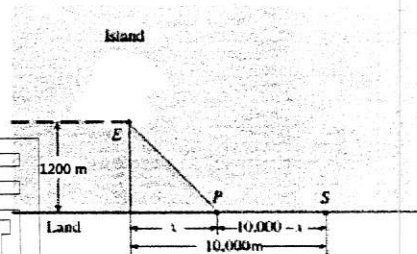


2.(20%) Find the derivative of the functions.

(a) $r(x) = \frac{2x}{7} - \frac{x^{0.3}}{2} + \frac{4}{7x^{1.3}} - 4$

(b) $g(x) = \frac{e^{-10x}}{10xe^{10x}}$

3.(20%) In the diagram, S represents the position of a power relay station located on a straight coast, and E shows the location of a marine biology experimental station on an island. A cable is to be laid connecting the relay station with the experimental station. If the cost of running the cable on land is \$ 5/running meter and the cost of running the cable under water is \$ 13/running meter, locate the point P that will result in a minimum cost (solve for x).



4.(20%) Please evaluate the following integrals.

(a) $\int_5^{10} (22x - 48x^2) dx$

(b) $\int ((4x - 1)e^{4x^2 - 2x} + 7xe^{x^2}) dx$

5.(20%) Use Lagrange Multipliers to solve the problem. Find the maximum value of $f(x, y) = 2xy$ subject to $x^2 + y^2 = 8$

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