

2019/10/21, Calculus Quiz (2), §2.6 ~ §3.2 (可用鉛筆、需計算過程、交回題目卷及答案卷)

1. (20%) Find the limits (a) $\lim_{\theta \rightarrow -\infty} \frac{\cos \theta}{3\theta}$. (b) $\lim_{r \rightarrow \infty} \frac{r + \cos \frac{1}{r}}{2r + 7 - 5 \sin r}$.
2. (40%) Find all possible asymptotes: (a) $y = \frac{2x^{3/2} + 2x - 3}{\sqrt{x} + 1}$. (b) $y = \sqrt{\frac{x^2 + 9}{9x^2 + 1}}$.
3. (20%) (a) What is the definition of the derivative of the function $f(x)$ with respect to the variable x ? (b) What does the function f is differentiable at x mean?
4. (20%) Does the graph of

$$f(x) = \begin{cases} x^2 \sin(1/x) & x \neq 0 \\ 0, & x = 0, \end{cases}$$

have a tangent at the origin? Give reasons for your answer.

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