

P.O.C.A. WONG SIU CHING SECONDARY SCHOOL
PURE MATHEMATICS
CALCULUS : LIMIT OF FUNCTIONS
ASSIGNMENT 14

Date	Name	Grade / Score
		/15

1. Let $f(x) = \begin{cases} 2x^2 + 1 & \text{if } x > 0 \\ 1 & \text{if } x = 0 \\ x^3 - 2 & \text{if } x < 0 \end{cases}$. Evaluate $\lim_{x \rightarrow 0^+} f(x)$, $\lim_{x \rightarrow 0^-} f(x)$, $\lim_{x \rightarrow 0} f(x)$ and $f(0)$. (4 marks)

2. Evaluate $\lim_{x \rightarrow 0} \frac{\sin x}{|x|}$. (3 marks)

3. Use the squeezing principle, evaluate

(8 marks)

(a) $\lim_{x \rightarrow 0} x^2 \cos x$

(b) $\lim_{x \rightarrow \infty} \frac{x \cos x}{\sqrt{1+x^3}}$

(c) $\lim_{x \rightarrow 0} g(x) \sin \frac{1}{x}$ if $\lim_{x \rightarrow 0} g(x) = 0$.