2020/10/12, 微積分小考 (1), §2.1 ∼ §2.5 (可用鉛筆、需計算過程、交回題目卷及答案卷)

1. (15%, 15%) (a) Find the slope of the parabola $y = x^2$ at the point $P(2, 4)$. Write an equation for the tangent to the parabola at this point. (b) Let $g(x) = \sqrt{x}$ for $x \geq 0$. Find the average rate of change of $g(x)$ with respect to x over the intervals $[1, 1 + h]$ and calculate the limit as h approaches zero.

2. (15%) Please give three examples that "a function may fail to have a limit at a point in its domain.". (需寫出函數)

3. (10%, 20%) (a) What is the definition of the limit of a function? (b) Prove the limit: $\lim_{x\to 1} \frac{1}{x} = 1$.

4. (15%, 10%) Find the limit: (a) $\lim_{x\to 1} \frac{\sqrt{2x}(x-1)}{|x-1|}$. (b) $\lim_{x\to 0} \frac{x + x\cos x}{\sin x \cos x}$.

. . . . . .

2020/10/12, 微積分小考 (1), §2.1 ∼ §2.5 (可用鉛筆、需計算過程、交回題目卷及答案卷)

1. (15%, 15%) (a) Find the slope of the parabola $y = x^2$ at the point $P(2, 4)$. Write an equation for the tangent to the parabola at this point. (b) Let $g(x) = \sqrt{x}$ for $x \geq 0$. Find the average rate of change of $g(x)$ with respect to x over the intervals $[1, 1 + h]$ and calculate the limit as h approaches zero.

2. (15%) Please give three examples that "a function may fail to have a limit at a point in its domain.". (需寫出函數)

3. (10%, 20%) (a) What is the definition of the limit of a function? (b) Prove the limit: $\lim_{x\to 1} \frac{1}{x} = 1$.

4. (15%, 10%) Find the limit: (a) $\lim_{x\to 1} \frac{\sqrt{2x}(x-1)}{|x-1|}$. (b) $\lim_{x\to 0} \frac{x + x\cos x}{\sin x \cos x}$.

. . . . . .

2020/10/12, 微積分小考 (1), §2.1 ∼ §2.5 (可用鉛筆、需計算過程、交回題目卷及答案卷)

1. (15%, 15%) (a) Find the slope of the parabola $y = x^2$ at the point $P(2, 4)$. Write an equation for the tangent to the parabola at this point. (b) Let $g(x) = \sqrt{x}$ for $x \geq 0$. Find the average rate of change of $g(x)$ with respect to x over the intervals $[1, 1 + h]$ and calculate the limit as h approaches zero.

2. (15%) Please give three examples that "a function may fail to have a limit at a point in its domain.". (需寫出函數)

3. (10%, 20%) (a) What is the definition of the limit of a function? (b) Prove the limit: $\lim_{x\to 1} \frac{1}{x} = 1$.

4. (15%, 10%) Find the limit: (a) $\lim_{x\to 1} \frac{\sqrt{2x}(x-1)}{|x-1|}$. (b) $\lim_{x\to 0} \frac{x + x\cos x}{\sin x \cos x}$.