

微積分作業

September 19, 2025

- 1 Find the limit (if it exists). If it does not exist, explain why.

$$\lim_{x \rightarrow 3} f(x), \quad f(x) = \begin{cases} x^2 - 4x + 6, & x < 3 \\ -x^2 + 4x - 2, & x \geq 3 \end{cases}$$

- 2 find the constant a , such that the function is continuous on the entire real number line.

$$g(x) = \begin{cases} \frac{4\sin x}{x}, & x < 0 \\ a - 2x, & x \geq 0 \end{cases}$$

- 3 find the one-sided limit (if it exists).

$$\lim_{x \rightarrow 3^+} \left(\frac{x}{3} + \cot \frac{\pi x}{2} \right)$$