微積分作業5

October 17, 2025

1 find the open intervals on which the function is increasing or decreasing.

$$f(x) = sin^2(x) + sin(x), \quad 0 < x < 2\pi$$

2 find all relative extrema of the function. Use the Second Derivative Test where applicable.

$$f(x) = \frac{9x - 1}{x + 5}$$

3 find the limit, if it exists.

$$\lim_{x \to -\infty} \frac{2x}{(x^6 - 1)^{\frac{1}{3}}}$$

4 analyze and sketch a graph of the function over the given interval. Label any intercepts, relative extrema, points of inflection, and asymptotes. Use a graphing utility to verify your results.

$$y = 2(x - 2) + cot(x), \quad 0 < x < \pi$$