

**Problem 1** Compute the following limits:

1.  $\lim_{x \rightarrow 1} \frac{x^2 + x + 1}{x - 1}$
2.  $\lim_{x \rightarrow 1} \frac{x^2 - 2x + 1}{x - 1}$

**Problem 2** Given the function

$$f(x) = \begin{cases} 2x + 1 & \text{if } x \leq 1 \\ x + 2 & \text{if } x > 1 \end{cases}$$

1. Calculate  $\lim_{x \rightarrow 1} f(x)$ .
2. Is  $f$  a continuous function ? Explain why.