

1. Use the definition of the derivative to find $f'(1)$ for $f(x) = \frac{x+3}{3x+1}$.

2. Determine if the function

$$f(x) = \begin{cases} x^2 + 2x & \text{if } x < 0 \\ 2x & \text{if } x \geq 0 \end{cases}$$

is differentiable at $x = 0$.