1. Find 
\[ \lim_{h \to 0} \frac{f(x + h) - f(x)}{h}, \]
where \( f(x) = \sqrt{x + 1} \).

2. Let \( f(x) = \begin{cases} 2 & \text{if } x > 3 \\ -x & \text{if } x \leq 3 \end{cases} \). Find the following

(a) \( \lim_{x \to 3^+} f(x) \)

(b) \( \lim_{x \to 3^-} f(x) \)

(c) \( \lim_{x \to 3} f(x) \)

(d) \( \lim_{x \to \infty} f(x) \)

(e) \( \lim_{x \to -\infty} f(x) \)
3. Find the value(s) of \( x \) for which \( f(x) = \frac{x+2}{x^3+x^2-2x} \) is discontinuous.

4. If a manufacturer’s average cost equation is

\[ \bar{c} = 400 + 30q + 0.1q^2. \]

Find the marginal cost function? What is the marginal cost when 10 units are produced?