Math 132
Quiz IB

Name: Sec: Serial:

1. Find
\[ \lim_{h \to 0} \frac{f(x + h) - f(x)}{h}, \]
where \( f(x) = \sqrt{x + 4}. \)

2. Let \( f(x) = \begin{cases} 2 & \text{if } x > 2 \\ -x & \text{if } x \leq 2 \end{cases}. \) Find the following
   
   (a) \( \lim_{x \to 2^+} f(x) \)

   (b) \( \lim_{x \to 2^-} f(x) \)

   (c) \( \lim_{x \to 2} f(x) \)

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

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

4. If a manufacturer’s average cost equation is

\[
\bar{c} = 200 + 20q + 0.2q^2.
\]

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