You may \textit{not} use a calculator.

\textbf{PART I.} Please clearly show all of your work.

1. \textit{(36 points)} For the function \( f \), whose graph is given, state the value of each quantity, if it exists. If it does not exist, explain why.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{function_graph.png}
\end{figure}

a. \textit{(9 points)} \( \lim_{x \to -2^-} f(x) \)

b. \textit{(9 points)} \( \lim_{x \to -2^+} f(x) \)

c. \textit{(9 points)} \( \lim_{x \to -2} f(x) \)

d. \textit{(9 points)} \( f(-2) \)

SEE OTHER SIDE FOR MORE PROBLEMS.
2. (34 points) Evaluate the limit, if it exists. If it does not exist, explain why.

\[
\lim_{x \to 0} \frac{\sin^2 x \sec (x^2)}{3x^2}
\]

PART II. Please circle the best answer. No partial credit will be given.

3. (15 points) Is the following true or false?

\[
\lim_{x \to 1} \frac{x^2 + 6x - 7}{x^2 + 5x - 6} = \frac{\lim_{x \to 1} (x^2 + 6x - 7)}{\lim_{x \to 1} (x^2 + 5x - 6)}
\]

A) True
B) False

4. (15 points) Which of the following are continuous on the interval \([2, \infty)\)?

\[
f(x) = \frac{x^2 + 3}{x + 2}, \quad g(x) = \sqrt{3x - 6}, \quad h(x) = \begin{cases} 
\frac{1}{x-3} & \text{if } x \neq 3 \\
1 & \text{if } x = 3
\end{cases}
\]

A) \(f\) only.
B) \(h\) only.
C) \(f\) and \(g\) only.
D) \(g\) and \(h\) only.
E) \(f, g, \) and \(h\).