Math 1A
Quiz 3

Instructions: Answer each problem as completely as you can. Simplify each answer as much as possible, and box or circle your final answer. Remember, answers without justification will not receive full credit. You have 15 minutes. Good luck!

1. A particle’s height as a function of time is given by \( g(t) = 2t^2 + 1 \). Find the average velocity of the particle (a.k.a. the slope of the secant line of \( g \)) over the time interval \([2, 2+h]\).

2. \( f(x) = \frac{x^2 - 2x - 24}{x^2 - 4x + 4} \). Find \( \lim_{x \to 2} f(x) \) or explain why it doesn’t exist.

3. Sketch the graph of a function \( h \) satisfying all of the following conditions:

\[
\begin{align*}
\lim_{x \to 0} h(x) &= \infty \\
\lim_{x \to 1^-} h(x) &= 0 \\
\lim_{x \to 1^+} h(x) &= -1 \\
\lim_{x \to -2^+} h(x) &= -\infty \\
h(1) &= 0 \\
h(-2) &= -1
\end{align*}
\]