For this entire exam, let $f(x) = x^2 + x + 1$ and $g(x) = \sqrt{4 + 2x}$.

1. Find $g(6)$, $(f \circ g)(0)$, $(g \circ f)(1)$, and the intersection points of $f$ and $g^2$.

2. Show, using the definition of the limit, that $\lim_{x \to 1} f(x) = 3$ and $\lim_{x \to -2^+ \frac{1}{g(x)}} = \infty$.

3. Show, using the Intermediate Value Theorem, that $f$ and $g$ have an intersection point in the interval $(0, 1)$. Use the bisection method to determine an interval of length 0.125 in which this point lies.

4. Calculate $\lim_{x \to 1} \frac{f(x) - f(1)}{x - 1}$ and $\lim_{t \to 6} \frac{g(t) - g(6)}{t - 6}$.