Name _____

Homework 3
section 1.3

1. (8) Given that $g(t) = t^2 + t$, compute and simplify completely the expression

$$\frac{g(t+h) - g(t-h)}{2h}.$$

2. (8) A tree of height h meters has, on average, B branches, where $B = h + 1$. Each branch has, on average, L leaves where $L = 2B^2 + B$. Find the average number of *leaves on a tree* as a function of height.

3. (2ea) Determine functions $f(x)$ and $g(x)$ so that $f(g(x)) = h(x)$ for the following functions $h(x)$. Do not use $f(x) = x$ or $g(x) = x$.

   (a) $h(x) = (x^2 + 1)^{15}$

   (b) $h(x) = e^{\sqrt{x}}$