HW 3

1. Let $f(t)$ be real-analytic at $g(t_0)$ and $g(t)$ at t_0. Then prove that $h(t) = f(g(t))$ is real-analytic at t_0.

2. If a real-valued function f defined in a neighbourhood of t_0 is analytic is t_0, then prove that

   (a) f is smooth in a neighbourhood of t_0, and

   (b) there exist positive δ, M such that for $t \in (t_0 - \delta, t_0 + \delta)$, $|f^{(k)}(t)| \leq M \frac{k!}{\delta^k}$ for $k = 0, 1, 2 \ldots..$.