~~[illegible]~~

$$\sup |f(t)| \leq 2 \sup f(t) + f(t_0)$$

$$|f(t)| \leq |f(t) - f(t_0)| + |f(t_0)|$$

$$\leq L\|t - t_0\| + |f(t_0)|$$

$$\sup |f| \leq \boxed{Lh + |f(t_0)|}$$

Nice!

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in particular need L, $\nabla f(t)$ to be non-degenerate – which is fine to assume.

Would be good to show that $\sup|\nabla^3 f(t)|$, $\nabla f(t)$ are non-degen as would remove this assumption.