# Analysis 1: Aug–Nov 2026

## Quiz 3: Time 1 hour

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You can use all results we have discussed on sequences and continuity of functions, as well as Rolle's theorem and Mean Value theorem – but you will have to state the result precisely.

For a function $h$, $h'$ will denote its derivative, if it exists.

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Q1: Let $f : (a, b) \mapsto (c, d)$ be a one-one onto (bijective) function. Let $t : (c, d) \mapsto (a, b)$ be defined by setting $t(u) = v$ for $u \in (c, d)$ and $v \in (a, b)$ such that $f(v) = u$. Suppose $f$ is differentiable and $f'(x) \neq 0$ for all $x \in (a, b)$. Show that $t$ is also differentiable and obtain $t'$ in terms of $f'$.