Analysis 1: Aug–Nov 2026

Quiz 2: Time 20 minutes

November 5, 2026 · 10 marks

You may use results related to sequences, continuous functions and uniform convergence, and the ratio and root tests for convergence of a series.

You may not use the mean value theorem.

Q1: Let $\{a_n : n \geq 0\}$ be a sequence such that the power series

$$f(x) = \sum_{n=0}^{\infty} a_n x^n$$

is (absolutely) convergent for all $x \in (-M, M)$. Show that f is a differentiable function on $(-M, M)$ and the derivative f' also admits a power series expansion that is absolutely convergent for all $x \in (-M, M)$.