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Elementary Real Analysis

Transcend the formulaic approaches to a subject that has been paralysed by rote and routine for decades. Study the underlying motivations and driving forces behind the invention of such fundamental constructions as Lebesgue measures and the implicit function theorem.

Outline of Syllabus.

Continuous and discrete modelling

Weierstrass formulation; metrics

Generalisation to higher dimensions

Algorithmic formulation

Limiting (Thompson)

Convergence and divergence of sequences

Differentiability; cusps

Analyticity and smoothness

Differential equations

Integration; generalisation

Integral transforms

Lebesgue integration Measure theory; probability

Implicit function theorem; parameterisation

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