Inverses. Logarithmic functions.
· Limits. Sequences, limits of sequences. Convergence of monotonic sequences. The Nepero number e. Geometric series. Limit of functions. Limit rules, infinite limits and indeterminate forms. Order of infinites and infinitesimals. Series and convergence criteria.
· Continuity. Continuity and its consequences. Classes of continuous functions. Basic type of discontinuities. The Extreme Value Theorem and the Intermediate Value Theorem.
· Derivatives. Definition of derivative, geometric and physical interpretation. Rules of derivation (derivatives of elementary functions, chain rule, product rule). Real functions of several variables: partial derivatives, gradient, directional derivatives, differentiability and tangent plane.
· Applications of the derivative. Lagrange Theorem and its consequences. Second derivative and curve sketching. Problem solving: Optimization. (*) Taylor expansion.