COURSE CONTENTS
Math 101

Contents

[UNDER DEVELOPMENT]

1. LIMITS

2. DERIVATIVES

3. INTEGRALS

See *itegrals* and *integration techniques*. Principal topics are:

(1) anti-derivatives and indefinite integrals (definition, existence, properties);
(2) Riemann sums and definite integrals (definition, existence, properties);
(3) fundamental theorem of integral calculus (differentiating integrals with variable upper/lower limit, the Newton-Leibnitz formula);
(4) applications of definite integrals (general principle, geometric applications);
(5) integration techniques (substitution, integration by parts, trigonometric, exponential, and hyperbolic functions, trigonometric and hyperbolic substitutions, hyperbolic functions, table integrals).

4. TRANSCENDENTAL FUNCTIONS

See *transcendental functions*. Principal topics are:

(1) exponential and logarithmic functions (definitions, domain and range, algebraic identities, derivatives and integrals);
(2) inverse trigonometric functions (definitions, domain and range, algebraic identities, derivatives);
(3) hyperbolic functions (definitions, domain and range, algebraic identities, derivatives and integrals).

See also logarithmic differentiation, trigonometric and hyperbolic substitutions, integrating trigonometric and hyperbolic expressions.