

Plane Trigonometry

The trigonometric ratios. Definitions. Measures of angles, and arcs, signs of trigonometric ratios.

Relations between trigonometrical functions of the different arcs.

Solution of right-angled triangles and demonstration of formulae.

Solution of oblique-angled triangles.

Different expressions of the surface of triangles.

Natural trigonometrical functions.

Relations between the trigonometrical functions of an angle.

Formulae for the sum and difference of arcs.

Transformation of sums and differences of sines and cosines into products.

Trigonometrical equations.

Construction and use of logarithmic tables. Solution of triangles by logarithms.

Different expressions of the surface of a triangle with demonstration.

Radius of circum circle, and incircle of a triangle, radii of excircles of a triangle.

Heights and distances.

Area of quadrilaterals.

Maxima and minima.

Trigonometrical series.

Problems.

Text Books.—Trigonométrie des Frères.—Trigonométrie de A. Cambier.—Hall and Knight's Elementary trigonometry.

Spherical Trigonometry

Right-angled triangles.—Formulae relating to right-angled spherical triangles.—Napier's rules.—The quadrantal triangle.—Problems.

Oblique and isocles triangles.—The fundamental formula.—

Relations between the trigonometrical functions of the three sides

and the three angles of any spherical triangle.—Napier's analogies.

—Solution of the spherical triangle in the six different cases.—

Ambiguous case.—Problems.

Applications.—To reduce an angle to the horizon; to find the inclination of two adjacent faces of a regular polyhedron; to find

the distance between two points on the surface of the earth.

Area of a spherical triangle. Radii of the circum circle and incircle of a triangle. Solidity of polyhedrons.

Text Books:—Trigonométrie de A. Cambier.—Chauvenet's Plane and Spherical trigonometry.—Todhunter and Leathem's Spherical trigonometry.

Astronomy

The celestial sphere, spherical coordinates, Azimuth and altitude, declination and hour angle, declination and right ascension, celestial latitude and longitude.