

Chapter XIII—Asymptotes. § 196-203 explained more simply.

Chapter XIV—Brief explanation of multiple points.

Chapter XV—Brief explanation of envelopes, and the general methods of determining them.

Chapter XVI—Convexity and concavity. Omit the analytical investigation in § 223.

Chapter XVII—Radius of curvature; Omit § 228. Read over § 231; omit § 232-3; 234-6. Read over § 239. Omit § 241-2. Read over § 243-8, and note conclusions. Omit § 249-54. Read over § 255.

Chapter XVIII—Brief explanations and easy examples. The Limaçon and Trisectrix. Trisection of an angle. The conchoid § 270-71.

Chapter XIX—Roulettes § 272-7. Read over § 278. Geometrical proof of hypocycloid and hypotrochoid when the radius of the inner circle is half that of the outer, § 285.

Chapter XX—Elimination of Constants and Functions, § 302-3.

Chapter XXI—Change of the Independent Variable, § 311, 315-6. *Marks, June, 500*

SECTION M.—*Integral Calculus.* This subject will be commenced as soon as the process of differentiation has become easy. The elementary formulæ as the reverse of differentiation, and easy variations of them. Substitution, and particularly trigonometrical substitution,  $\tan^n \theta d\theta$ . Integration by parts. The various cases of  $\sin^n \theta$ .  $\cos^n \theta d\theta$ . Rational fractions..... *Marks—April, 100.*

*Marks for Notes...* .....100.

SYLLABUS OF MATHEMATICS—2ND CLASS—(OBLIGATORY)—TOTAL MARKS, 2500.

	<i>Marks</i>
Euclid ( <i>Todhunter</i> )—3rd and 4th Class course.....	300
Arithmetic—As for 4th Class.....	100
Algebra—4th Class course.....	200
Trigonometry—3rd and 4th Class course—and selection of spherical triangles.....	200
Conics—3rd Class course.....	100
Mensuration ( <i>Lectures or Notes to be printed.</i> )	

The bases of similar pyramids are in the duplicate ratio of their altitudes. Equality of pyramids on the same or equal basis, and having the same altitude, proved by equality of sections. Trisection of a prism into three equal pyramids. Volume of a pyramid or cone. Truncated prism on a triangle or parallelogram as base, in terms of its mean altitude. Wedge regarded either as a truncated prism, or as a pyramid and right wedge or semi-parallelepiped. Volume of frustum of pyramid or cone. Volume of a prismoid defined as a solid bounded by planes, two of which are parallel, assumed to be divisible into prisms, pyramids and wedges, all having the same altitude; mean section  $\frac{A + 4M + B}{6}$ . General definition of a

mean. Application to calculations of earth work. Surface of pyramid or cone. Centre of gravity of pyramid or cone (both volume and surface), omitting proof for former. Surface of a sphere, zone or segment, and centre of gravity of each. Volume of a spherical sector proved by summing the volume between two consecutive sectors, considered as a conical volume. Volume of a sphere. Volume of prolate and oblate spheroids and of paraboloid of revolution (without proofs). Statement and use of Guldin's Theorems..... *Marks—Dec., 100; June, 200.*

*Statics*..... *Marks—June, 200.*

*Graphic Statics (Tracts on Mechanics, Part II).* Problems 1-4, 6, 7, with alternative solution; 8, 11, 12, 21..... *Marks—April, 100.*

*Dynamics and Work.*—(*Todhunter's Mechanics for beginners*)

Velocity. Chapter 1.—Angular velocity in terms of circular measure.

$$v = ra; a = \frac{2\pi n}{t}$$