



An Elementary Treatise on the Differential and Integral Calculus; With Numerous Examples

By Edward Albert Bowser

Rarebooksclub.com, United States, 2013. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.This historic book may have numerous typos and missing text. Purchasers can usually download a free scanned copy of the original book (without typos) from the publisher. Not indexed. Not illustrated. 1883 edition. Excerpt: . Find in the line joining the centres of two spheres, the point from which the greatest portion of spherical surface is visible. The function to be a maximum is the sum of the two zones whose altitudes are AD and ad; hence we must find an expression for the areas of these zones. Put CM = E and cm = r, Cc = a and CP = x. The area of the zone on the sphere which has R for its radius (from Geometry, or Art. 194) = $2\pi R \cdot \text{altitude}$ = $2\pi R \cdot AD$ = $2\pi R \cdot (R - x)$ = $2\pi R^2 - 2\pi R x$. Similarly, the area of the zone on the smaller sphere = $2\pi r \cdot ad$ = $2\pi r \cdot (a - x)$ = $2\pi r a - 2\pi r x$. The total area = $2\pi R^2 - 2\pi R x + 2\pi r a - 2\pi r x$. To find the maximum, differentiate with respect to x: $-2\pi R - 2\pi r = 0$, which is impossible. Therefore, the maximum occurs at the boundary. If x = 0, the area is $2\pi R^2 + 2\pi r a$. If x = a, the area is $2\pi R^2 - 2\pi R a$. The maximum is the greater of these two. CHAPTER IX. TANGENTS, NORMALS AND...



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