

irregular, polygons circumscribed about a circle or inscribed in a circle, also figures bounded by straight lines and arcs of circles, all are examined in regard to their forms when their areas or perimeters have maximum or minimum values. Pairs of right triangles are also treated in a few special cases. The sum of the distances and the sum of the squares of the distances of a point from  $n$  points in a plane is minimized and some interesting conclusions are drawn. The theorem is given for the sum of the  $h$ th powers of the distances when  $n = 3$ . The minimum perimeter is found for a triangle inscribed in a given triangle and for a quadrilateral inscribed in a quadrilateral that is inscribed in a circle. There are several quite unexpected results in connection with this problem.

Part two treats of solid geometry. Prisms and tetrahedrons are studied in the same detail as the triangles in part one.

In most respects the book reads very smoothly. The number of very slightly different cases treated makes some parts of it almost tiresome, but the detail is no doubt justifiable. On the other hand, one finds a severe brevity of statement in some places, but these are rather few. Typographical errors are not many, but the following may be noted: near the bottom of page 15, read  $U - 2c$  for  $U - 2C$ . In line 4 from the bottom of page 18, read "innerem" for "äusserem." Just below theorem 57, page 41, read  $\rho > \rho'$ . In the middle of page 47, read 60 for 69. In the first line of § 6, page 51, read 43 for 41. The value of  $ABCD$  on page 73 is incorrect. In the value of  $\angle O_1B_1O_2$ , page 75, read  $C_2B_1O_2$  for  $B_1C_1O_2$  and  $CBO$  for  $BCO$ . In the value for  $A_1B_1'$ , page 86,  $\beta_1$  and  $\beta_1'$  are somewhat confused. On page 114, opposite figure 30, read  $B$  for  $B_1$ . On page 30, the author seems not to notice the possibility of  $C + D$  being equal to  $180^\circ$  but this does not vitiate his conclusions.

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*Advanced Shop Mathematics.* By EARLE B. NORRIS and RALPH T. CRAIGO. New York, McGraw-Hill Book Company, 1913. xi+214 pp.

THIS volume presents the second half of the instruction papers in shop mathematics as developed and used in the extension division of the University of Wisconsin. The intention of the authors as stated in the preface is "to present such of the principles of algebra, geometry, trigonometry and