ON A RIEMANN SUM CONSTRUCTION OF RUDIN

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There is a slight error on p. 323 of [1] where Rudin states "But n_j does not divide $k_j p_j \cdots$ and therefore the terms of the arithmetic progression

$$k_j p_j(x + (r/n_j)) \qquad (r = 1, 2, \cdots, n_j)$$

are not all congruent (mod 1). Since $\delta > \frac{1}{2}$ it follows that at least half of them lie in G." The idea underlying the last statement is the following: If there are t equally spaced points on a circle of circumference 1, then an interval of length $\delta > \frac{1}{2}$ should contain at least half of them. This is in fact true for even t and for sufficiently large t, $t > t_0(\delta)$. However for $t = 3$ one must have $\delta > \frac{2}{3}$. In fact one can easily verify the following:

LEMMA. *If P is a regular polygon inscribed in a circle of circumference 1, then any arc of this circle of length $\delta > \frac{2}{3}$ contains at least half the vertices of P.*

The results of [1] remain unaffected, if the condition "$\delta > \frac{1}{2}$" is changed into "$\delta > \frac{2}{3}$".

REFERENCE

1. W. Rudin, *An arithmetic property of Riemann sums*, Proc. Amer. Math. Soc. **15** (1964), 321–324.

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