The General Terms of Incircles'Tangent point two Right Triangless.

Suthittra Maneejantha[1], Piyada Phaphakdee[1], Waraporn Poolsawas[1]

Praphen Donsomphong[2], Chalinee Korphachon[2]

[1]*Prachaksilapakarn School's student,E-mail: lprajak.school@gmail.com.*

[2]*Prachaksilapakarn School*

Abstract

This study aims to investigate the sequence and general terms for finding the length of EF when the lengths of BD, DC, and AD are increased by factors of 1.5, 2, 2.5, 3, 3.5, 4, 4.5, 5, 5.5, and 6 times. The objective is to determine a pattern or general term for the length of EF based on the proportional increase in the sizes of triangles and circles relative to the original shapes. The GSP program is then used to verify and enhance the accuracy of both the new and original lengths of EF. The findings yielded the following formula

$$
\begin{aligned}
a_n = 1.515 & \binom{n-1}{1}(0.515) + \binom{n-1}{2}(-0.03) + \binom{n-1}{3}(0.06) \\
& + \binom{n-1}{4}(-0.09) + \binom{n-1}{5}(0.09) + \binom{n-1}{6}(0) \\
& + \binom{n-1}{7}(-0.27) + \binom{n-1}{8}(0.81) + \binom{n-1}{9}(-1.62) \\
& + \binom{n-1}{10}(2.43) + \binom{n-1}{11}(-2.43)
\end{aligned}
$$

The new length of EF, resulting from the increased sizes, does not necessarily correspond to a multiple of the original EF when the sizes of BD, DC, and AD are increased by specific factors. The general term for this increase was derived from the summarized results of the study. Upon verification with the GSP program, the accuracy of these findings was confirmed, aligning with the calculated results. The analysis and sequence construction to find the general term revealed that the new length of EF changes inconsistently with the proportional increase. This study enhances the understanding of how the length of EF varies with these size increases.

Keywords: EF distance, triangle, circle, general term, GSP program