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# Journey through Euclid

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**Abstract**

**In this work,Euclid V from Euclid I to IV was deduced**

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## Construction

In the Euclidean construction as shown in figure I, Let us assume that the small letters denote the sum of the interior angles of triangles namely,

x = AOB, y = AOC, z = DOC ,m = quadrilaterial BODE

a = ABC, b = ADC, c = BEC, d = AED

## Results:

Let the angles, AOD =BOC = EDC = 180 degrees= v (1)

Using (3), $x + y = v + a$ (2)

$y + z = v + b$ (3)

$z + m = 2v + c$ (4)

$m + x = 2v + d$ (5)

(4) - (7) gives, $m + a = y + v + d$ (6)

(5) - (6) gives, $m + b = y + v + c$ (7)

Squaring (8), $m^2+a^2+2ma = y^2+v^2+d^2+2yv+2yd+2vd$ (6a)

Squaring(9), $m^2+b^2+2mb = y^2+v^2+c^2+2yv+2yc+2vc$ (7a)

(4) + (6) = (5) + (7) = $a+c = b+d$ (8)

(6a) - (7a) given, $a^2-b^2+2ma - 2mb = d^2-c^2 + 2v(d-c)+2y(d-c)$

$a^2-b^2+2ma - 2mb = d^2-c^2 + 2(d-c)[ y + v ]$

Putting(7) in RHS, $a^2-b^2+2ma - 2mb = d^2-c^2 + 2(d-c)[ m + b - c ]$

i.e $a^2 - d^2 \quad + m [ 2a - 2b - 2d + 2c ] - b [b + 2c - 2d ] + c [ 2d +c -2c ]$

Applying (8) in the second factor of LHS, $( a + d ) ( a - d )- b [ b + 2c - 2d ]+ c [ 2d - c ]$

From (8), $a - d = b - c$ and $b - a = c - d$

.Putting these in the above equation, $b [ 2a - 3b + a + d ]+ c [ 2d - c -a - d ]$

Applying (8) in the second factor, $b [ 2a - 3b + a + d ] - bc = 0$

i.e $b [ 3a - 3b +d - c ] \quad = 0$

From (8) we get that $d - c = a - b$.Applying this $b[4a-4b] =0$

i.e $\quad a = b \qquad (9)$

Analysing (2) , (3) and (9) we have $z = x$ (10)

From (10) wqe obtain that the sum of the interior angles
of triangles AOB and COD are equal. (11)

**Discussion**

We have derived (11) without assuming the Euclidean parallel postulate.So, this is a solution to the 2300 years old unsolved problem.But it has benn shown that to deduce Euclid V from Euclid I to IV is impossible.Beyond all the question (11) is consistent. Hereafter, it is up to the research community to unlock this mystery.

**References:**


1.Effimov,NV: Higher Geometry,Mir Publishers,Moscow,1972,pp 1 - 30

2.Smilga : In the search for the beauty,Mir Publishers,Moscow,1972,pp 1-50


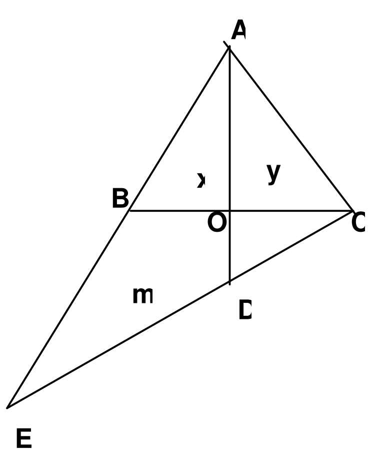


**FIGURE I EUCLIDEAN**