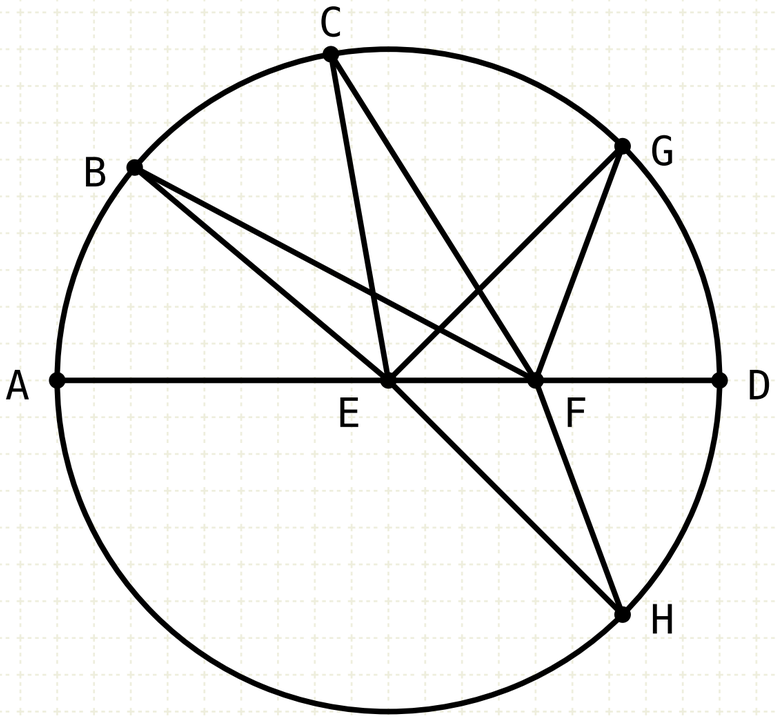
Euclid's Elements

Book III



A circle is a round straight line with a hole in the middle.

Mark Twain

quoting a schoolchild in "-English as She Is Taught-"

If people stand in a circle long enough, they'll eventually begin to dance.

George Carlin, Napalm and Silly Putty (2001)

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Proposition 24 of Book III

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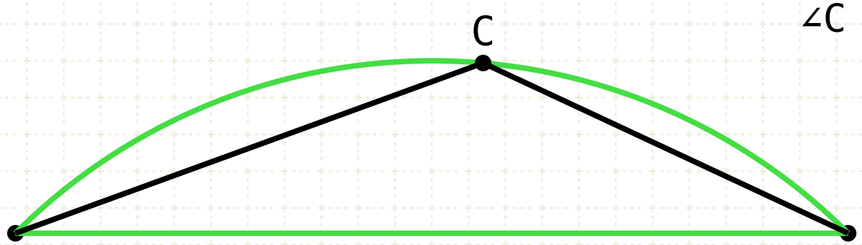
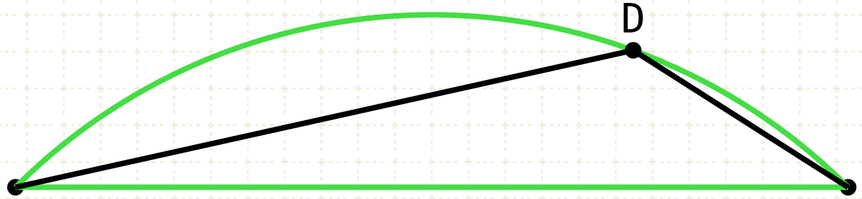


∠C = ∠D

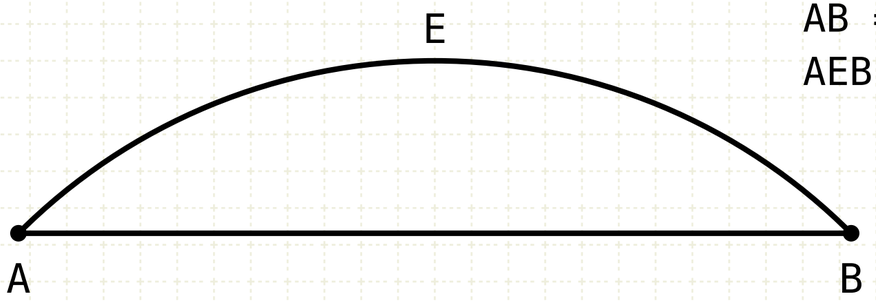


Definition - Similar segments of circles

'Similar segments of circles' are those which admit equal angles, or in which the angles are equal to one another

Proposition 24 of Book III

Similar segments of circles on equal straight lines are equal to one another.



AB = CD

AEB = CFD

In other words

If two similar segments are placed on one another, they will coincide with one another

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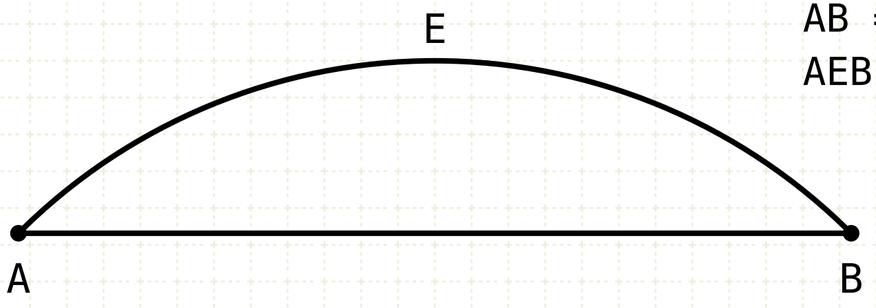

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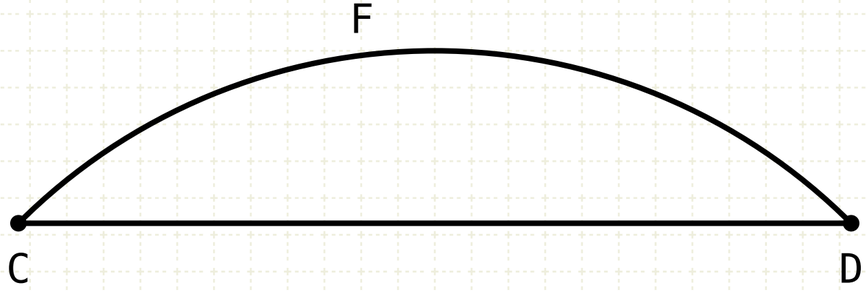

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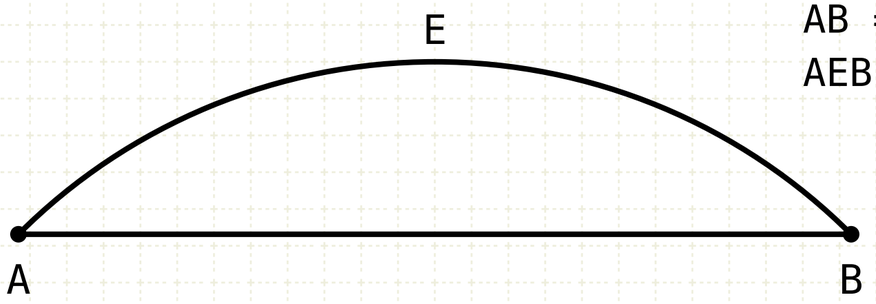

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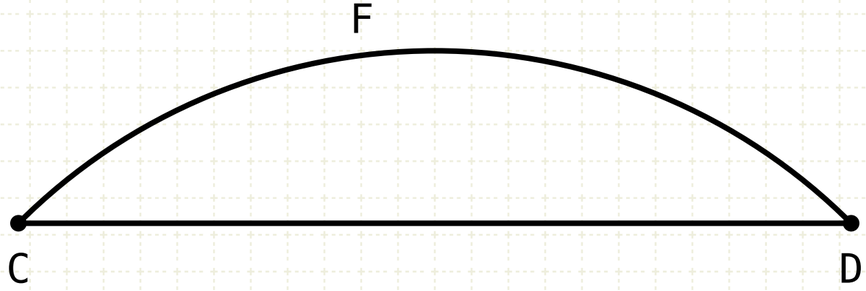

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Assume that when the segment AEB is is placed on CED, the circumference AB will not coincide with the circumference CD

Then it will either

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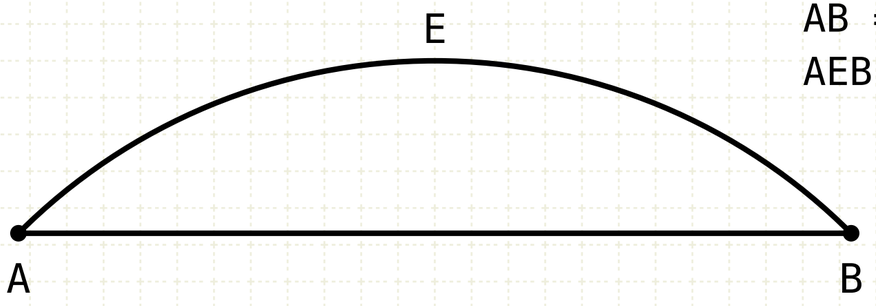

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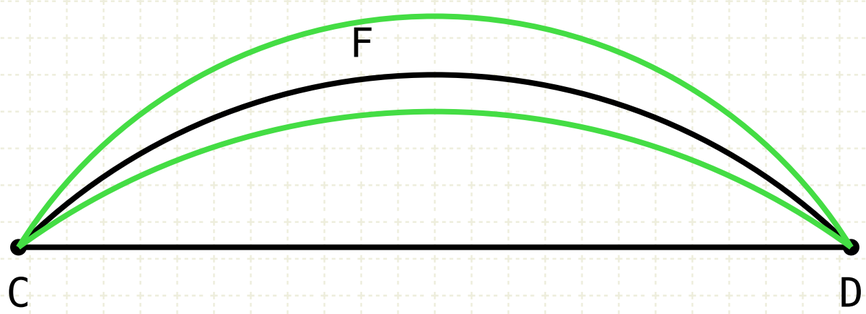

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- fall on the inside or the outside

  which is impossible (III·23)

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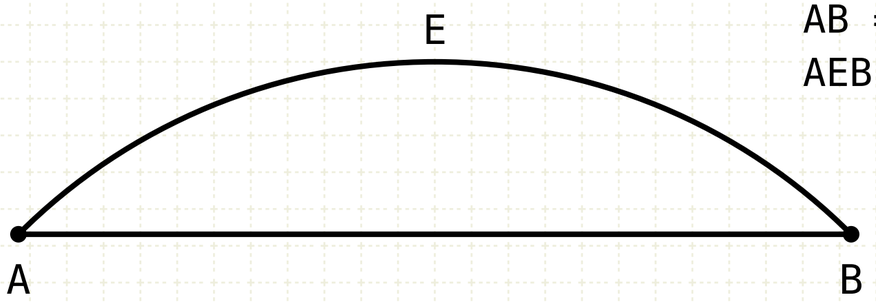

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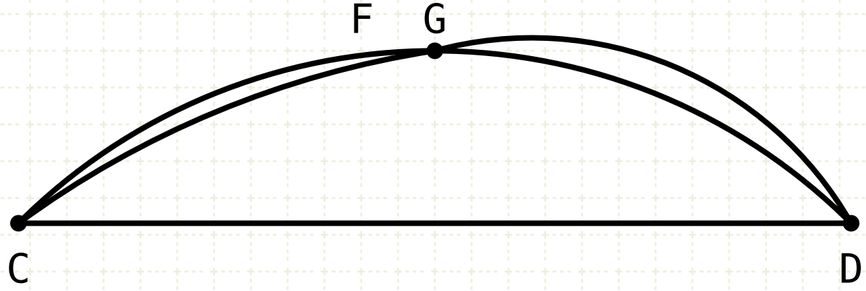

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or

- fall awry, such as CGD

  which is impossible, because then the circles would cut each other in more than two places, which is impossible (III·10)

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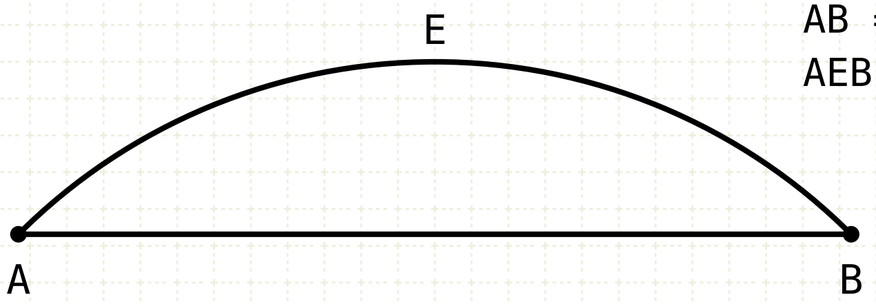

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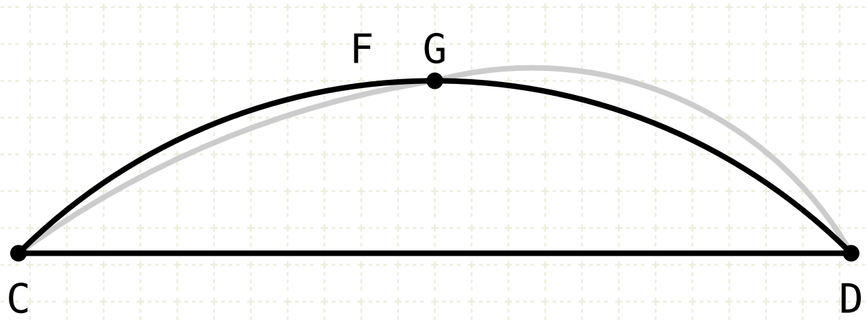

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Therefore, segment AEB would coincide with CFD, and will be equal to it

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