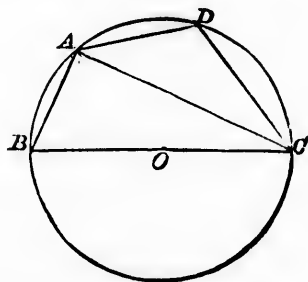


PROPOSITION XXXI. THEOREM.

In a circle, the angle in a semicircle is a right angle; and the angle in a segment greater than a semicircle is less than a right angle; and the angle in a segment less than a semicircle is greater than a right angle.



Let ABC be a \odot , of which O is the centre and BC a diameter.

Draw AC , dividing the \odot into the segments ABC , ADC .

Join BA , AD , DC .

Then must the \angle in the semicircle BAC be a rt. \angle , and \angle in segment ABC , greater than a semicircle, less than a rt. \angle , and \angle in segment ADC , less than a semicircle, greater than a rt. \angle .

First, \because the flat angle $BOC = \text{twice } \angle BAC$, III. C p. 150.

$\therefore \angle BAC$ is a rt. \angle .

Next, $\because \angle BAC$ is a rt. \angle ,

$\therefore \angle ABC$ is less than a rt. \angle .

I. 17.

Lastly, \because sum of \angle s ABC , $ADC = \text{two rt. } \angle$ s,

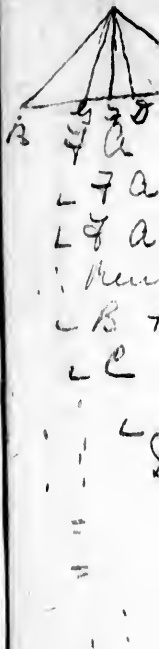
III. 22.

and $\angle ABC$ is less than a rt. \angle ,

$\therefore \angle ADC$ is greater than a rt. \angle .

Q. E. D.

Book III



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