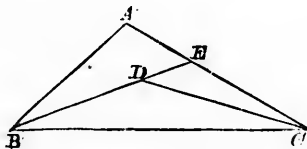


PROPOSITION XXI. THEOREM.

If, from the ends of the side of a triangle, there be drawn two straight lines to a point within the triangle; these will be together less than the other sides of the triangle, but will contain a greater angle.



Let ABC be a Δ , and from D , a pt. in the Δ , draw st. lines to B and C .

*Then will BD, DC together be less than BA, AC ,
but $\angle BDC$ will be greater than $\angle BAC$.*

Produce BD to meet AC in E .

Then BA, AE are together greater than BE . I. 20.

Add to each EC .

Then BA, AC are together greater than BE, EC .

Again, DE, EC are together greater than DC . I. 20.

Add to each BD .

Then BE, EC are together greater than BD, DC .

And it has been shewn that BA, AC are together greater than BE, EC ;

$\therefore BA, AC$ are together greater than BD, DC .

Next, $\because \angle BDC$ is greater than $\angle DEC$, I. 16.

and $\angle DEC$ is greater than $\angle BAC$, I. 16.

$\therefore \angle BDC$ is greater than $\angle BAC$.

Q. E. D.

Ex. 1. Upon the base AB of a triangle ABC is described a quadrilateral figure $ADEB$, which is entirely within the triangle. Shew that the sides AC, CB of the triangle are together greater than the sides AD, DE, EB of the quadrilateral.