

## Book 9 Proposition 23

If any multitude whatsoever of odd numbers is added together, and the multitude of them is odd, then the whole will also be odd.



For let any multitude whatsoever of odd numbers,  $AB$ ,  $BC$ ,  $CD$ , lie together, and let the multitude of them be odd. I say that the whole,  $AD$ , is also odd.

For let the unit  $DE$  have been subtracted from  $CD$ . The remainder  $CE$  is thus even [Def. 7.7]. And  $CA$  is also even [Prop. 9.22]. Thus, the whole  $AE$  is also even [Prop. 9.21]. And  $DE$  is a unit. Thus,  $AD$  is odd [Def. 7.7]. (Which is) the very thing it was required to show.