

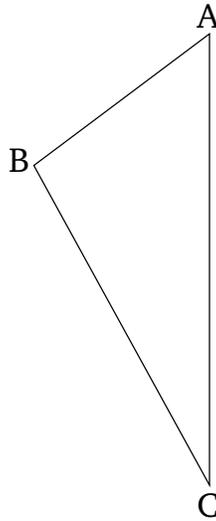
# Book 1

## Proposition 19

In any triangle, the greater angle is subtended by the greater side.

Let  $ABC$  be a triangle having the angle  $ABC$  greater than  $BCA$ . I say that side  $AC$  is also greater than side  $AB$ .

For if not,  $AC$  is certainly either equal to, or less than,  $AB$ . In fact,  $AC$  is not equal to  $AB$ . For then angle  $ABC$  would also have been equal to  $ACB$  [Prop. 1.5]. But it is not. Thus,  $AC$  is not equal to  $AB$ . Neither, indeed, is  $AC$  less than  $AB$ . For then angle  $ABC$  would also have been less than  $ACB$  [Prop. 1.18]. But it is not. Thus,  $AC$  is not less than  $AB$ . But it was shown that ( $AC$ ) is not equal (to  $AB$ ) either. Thus,  $AC$  is greater than  $AB$ .



Thus, in any triangle, the greater angle is subtended by the greater side. (Which is) the very thing it was required to show.