

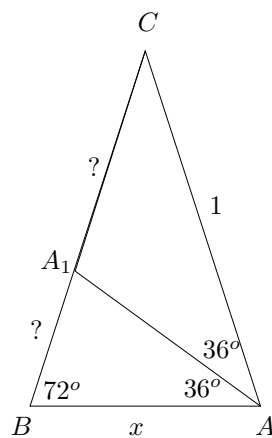
## Assignment 7

### Oral questions

No oral questions assigned due to the upcoming midterm.

### Question to be answered in writing

1. Let  $a$  and  $b$  be the side lengths of a parallelogram, and  $c$  and  $d$  the lengths of its diagonals. Prove that  $2(a^2 + b^2) = c^2 + d^2$ . (In other words, the sum of the lengths of the squares of the diagonals equals the sum of the squares of the side lengths.)
2. 4.4/8 (Angle bisector theorem)
3. Use the picture below to find an exact formula for  $\cos(72^\circ) = x/2$ .



Prove your claim using similarity of triangles and the angle bisector theorem.