Addendum to the solution for problem 4

One can actually prove more; namely, $|DE| > |AD| = |AE| = 2|AB| = 2|AC| = 2|BC|$. This follows because $|\angle ADE| = |\angle AED| > |\angle DAE = \angle BAC|$ and the result which states that in a triangle, the larger angle is opposite the longer side.$\blacksquare$