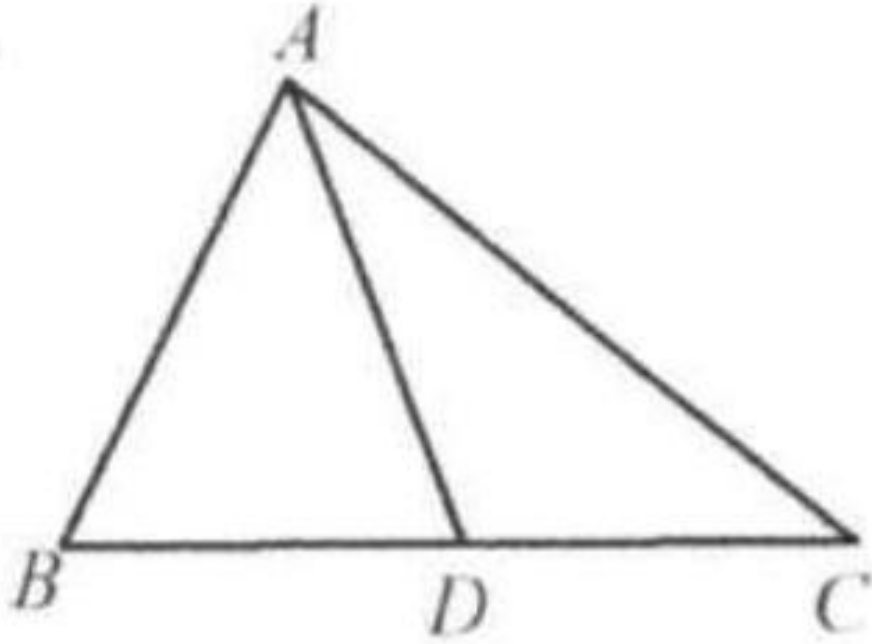# Problem 3

Problem

In $\triangle ABC$, $AB = 5.AC = 9.AD$ is the median on side BC. How many integer values are there of AD ?
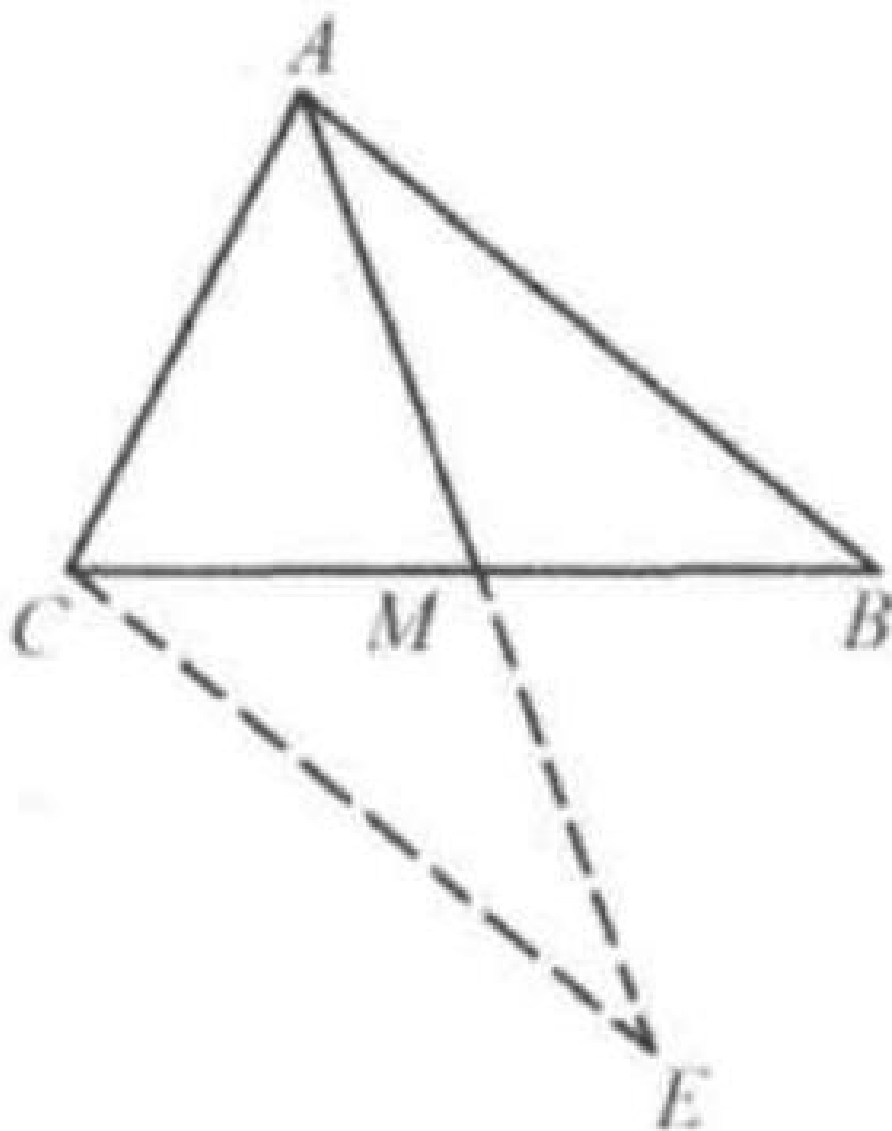

Solution

4. Extend AD to E such that $AD = DE$.
Connect BE.
Since $DE = AD$, $\angle BDE = \angle CDA.BD = DC$.
Thus $\triangle BDE \cong \triangle CDA$, $BE = AC = 9$.
By the triangle inequality theorem,
$9 - 5 < AE < 9 + 5 \quad \Rightarrow \quad 4 < 2AD < 14 \Rightarrow 2 < AD <$

E

7.

There are four possible values: $3, 4, 5$, and 6 .