Undergraduate Problem Solving Contest

Problem 3

Due December 2nd, 2013

Consider $\triangle ABC$ where $A = (0, 0)$, $B = (0, 2)$, and $C = (1, 501)$.

What is the shortest distance a point C' can be placed from point C such that so that $\triangle ABC'$ is an isosceles triangle with the same area as $\triangle ABC$? Give both the position of C' as well as the distance between C and C'. Be sure to justify that your answer is the correct (closest) answer.

Extra: Find all points that would make $\triangle ABC'$ an isosceles triangle with the same area as the $\triangle ABC'$ and provide a short explanation of why these are the only points that could create an isosceles triangle. (This would serve as sufficient jusitification that your answer was indeed the closest)

In the spirit of UPSC, you should not use the internet or look up the solution in a book. Please include your **name**, **student ID number**, and **email address** on your solution.