

Problem 2: Area of a Quadrilateral

Triangle ABC with $|AB| = 50$ and $|AC| = 10$ has area 120. Let D be the midpoint of AB , and let E be the midpoint of AC . The angle bisector of $\angle BAC$ intersects DE and BC at F and G respectively. What is the area of the quadrilateral $FDBG$?

As always, show your work, fully explain and justify your answer. A solution mainly obtained by computers or calculators will not be accepted.

Posting Date 2/6/2021. Submit solutions to Noah Aydin, Mathematics Department, RBH 319 by e-mail or hard-copy by noon on Feb 13, 2021. An email submission must be a single pdf file. Hard copy submissions must be dropped in the file holder at my office door (Hayes 319) and must include a time stamp.