

STEP II, 2015, Q2

- 2 In the triangle ABC , angle $BAC = \alpha$ and angle $CBA = 2\alpha$, where 2α is acute, and $BC = x$. Show that $AB = (3 - 4\sin^2\alpha)x$.

The point D is the midpoint of AB and the point E is the foot of the perpendicular from C to AB . Find an expression for DE in terms of x .

The point F lies on the perpendicular bisector of AB and is a distance x from C . The points F and B lie on the same side of the line through A and C . Show that the line FC trisects the angle ACB .



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