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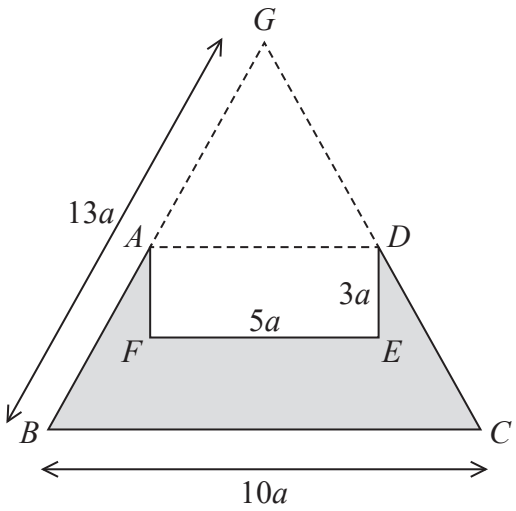


Figure 2

The uniform lamina GBC is in the shape of an isosceles triangle with $GB = GC = 13a$ and $BC = 10a$. The midpoint of GB is A and the midpoint of GC is D. The rectangle $AFED$ is such that $FE = 5a$ and $DE = 3a$.

The template, shown shaded in Figure 2, is formed by removing the triangle GAD and the rectangle $ADEF$ from the lamina GBC.

(a) Show that the centre of mass of the template is $\frac{7}{4}a$ from BC.

(5)

The template is freely suspended from A and hangs in equilibrium with AB at an angle of $\theta°$ to the downward vertical.

(b) Find the value of θ, giving your answer to the nearest whole number.

(5)

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Question 5 continued

(Total 10 marks)

Q5