2.



Figure 2

A light elastic string AB has natural length l and modulus of elasticity $2mg$.

The end A of the elastic string is attached to a fixed point. The other end B is attached to a particle of mass m. The particle is held in equilibrium, with the elastic string taut and horizontal, by a force of magnitude F. The line of action of the force and the elastic string lie in the same vertical plane. The direction of the force makes an angle α, where $\tan \alpha = \frac{3}{4}$, with the upward vertical, as shown in Figure 2.

Find, in terms of l, the length AB.

(6)

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Question 2 continued

(Total for Question 2 is 6 marks)