4.

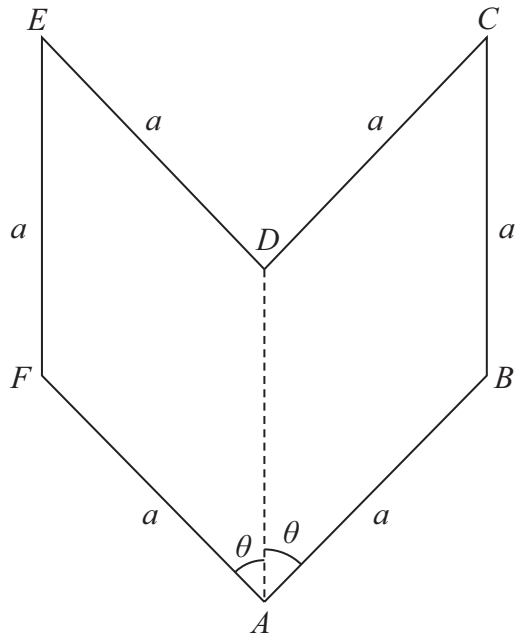


Figure 1

The uniform plane lamina $ABCDEF$ shown in Figure 1 is made from two identical rhombuses.

Each rhombus has sides of length a and angle BAD = angle $DAF = \theta$.

The centre of mass of the lamina is $0.9a$ from A.

(a) Show that $\cos\theta = 0.8$

(5)

The weight of the lamina is W.

A particle of weight kW is fixed to the lamina at the point A.

The lamina is freely suspended from B and hangs in equilibrium with DA horizontal.

(b) Find the value of k.

(4)

(Total for Question 4 is 9 marks)