Edinburgh Napier UNIVERSITY

Physics-Based Animation (SET09119)

Tutorial 05 - Centre of Mass & Moments

1 Question

An L-shaped 'card' of uniform density is shown below in Figure 2. Find the coordinates of the centre of mass (i.e., solid shape):

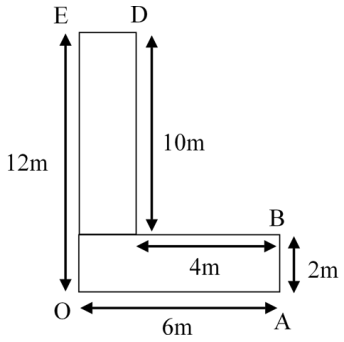

Figure 1:

2 Question

Find the centre of mass of a length of "wire" of uniform density bent into the shape of an L, as shown below in Figure 2 (i.e., hollow shape):

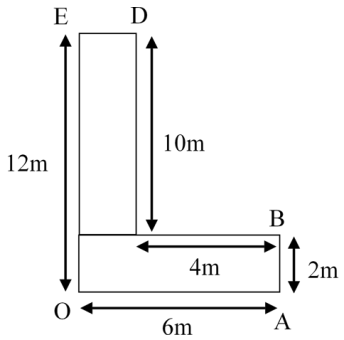

Figure 2:

3 Question

A light rod, shown below in Figure 3, has forces acting on it. Given an angle of 30 degrees:

(a) Find the total anti-clockwise moment about A

(b) Find the total anti-clockwise moment about C

4 Question

Find the coordinates of the centre of mass of the F shape shown in Figure 4 (assume a uniform solid thin material with the units in metres).

5 Question

Find the coordinates of the centre of mass of the F shape shown in Figure 4, if the shape is made of a uniform 'wire'.

6 Question

Find the length of OA for the L shape 'wire' given in Figure 5 below, if the centre of mass at $< \frac{17}{9}, \frac{44}{9} >$. The wire has a uniform density.

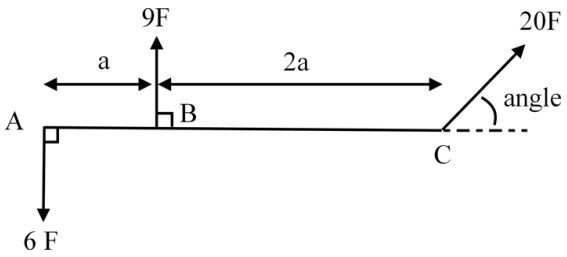

Figure 3:

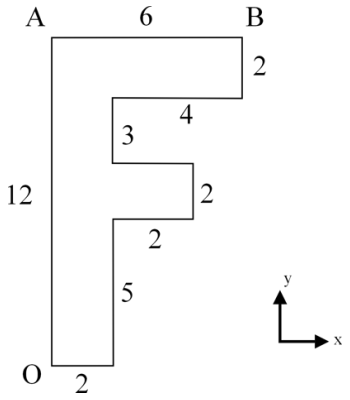

Figure 4:

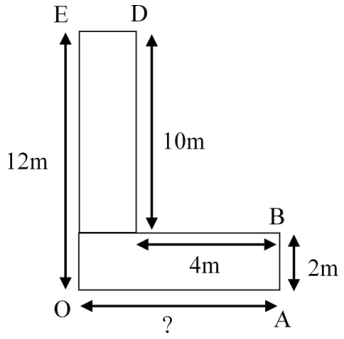

Figure 5: