6.



Figure 3

A washing line $ABCD$ holds two heavy garments, one at B and one at C.

The section AB makes an angle of 20° with the horizontal, the section BC is horizontal and the section CD makes an angle of $\alpha°$ with the horizontal, as shown in Figure 3.

The points A, B, C and D all lie in the same vertical plane.

The washing line and the two garments are in equilibrium, with all three sections of the washing line taut.

- the garment at B is modelled as a particle of mass 2 kg
- the garment at C is modelled as a particle of mass 3 kg
- the washing line is modelled as being light

(a) Find the tension in AB.

(2)

(b) Find the value of α

(6)

(c) If the washing line was **not** modelled as being light, state why it would **not** be possible to answer part (a).

(1)

(Total for Question 6 is 9 marks)