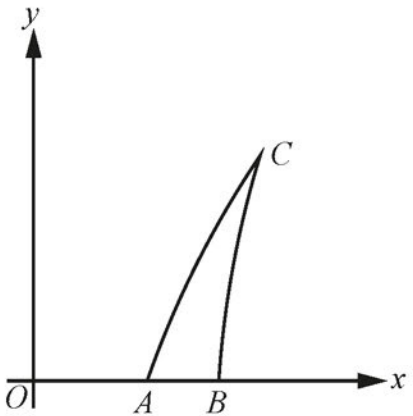
6



The shape ABC shown in the diagram is a student's design for the sail of a small boat.

The curve AC has equation $y = 2\log_2 x$ and the curve BC has equation $y = \log_2\left(x - \frac{3}{2}\right) + 3$.

(a) State the x-coordinate of point A. **[1]**

(b) Determine the x-coordinate of point B. **[3]**

(c) By solving an equation involving logarithms, show that the x-coordinate of point C is 2. **[4]**

It is given that, correct to 3 significant figures, the area of the sail is 0.656 units^2.

(d) Calculate by how much the area is over-estimated or under-estimated when the curved edges of the sail are modelled as straight lines. **[4]**