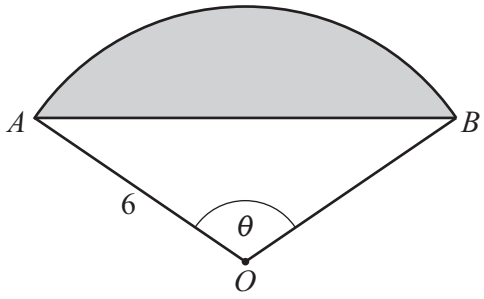
6 Find the x-coordinates of the points of intersection of the following curves.

$$y = 4\ln x \quad \text{and} \quad y = 5 - \frac{3}{\ln\left(x^2\right)}$$

Give your answers in exact form. [5]

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7 In this question, all lengths are in centimetres and all angles are in radians.



The diagram shows a sector of a circle with centre O and radius 6.

(a) It is given that the area of triangle AOB is $9\,\text{cm}^2$.

Find the value of $\sin\theta$. [2]

(b) It is also given that the exact area of the shaded segment is $(15\pi - 9)\,\text{cm}^2$.

Find the exact length of the arc AB. [4]

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