

**6** In this question you must show detailed reasoning.

A curve has equation  $y = \frac{\ln x}{x}$ .

- (i) Find the  $x$ -coordinate of the point where the curve crosses the  $x$  axis. [2]
- (ii) The points  $A$  and  $B$  lie on the curve and have  $x$  coordinates 2 and 4. Show that the line  $AB$  is parallel to the  $x$ -axis. [2]
- (iii) Find the coordinates of the turning point on the curve. [4]
- (iv) Determine whether this turning point is a maximum or a minimum. [5]