

9

A curve has equation

$$y = \frac{a}{\sqrt{x}} + bx^2 + \frac{c}{x^3} \quad \text{for } x > 0$$

where  $a$ ,  $b$  and  $c$  are positive constants.

The curve has a single turning point.

Use the second derivative of  $y$  to determine the nature of this turning point.

**You do not need to find the coordinates of the turning point.**

Fully justify your answer.

**[7 marks]**