

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

**(a)** Show that the gradient of the curve  $y = \sqrt{x}\left(\frac{1}{x^2} - 2x\right)$  at the point  $\left(\frac{1}{4}, \frac{31}{4}\right)$  is  $-\frac{99}{2}$ . [4]

**(b)** Find the equation of the tangent to the curve at  $\left(\frac{1}{4}, \frac{31}{4}\right)$  giving your answer in the form  $ax + by + c = 0$ , where  $a$ ,  $b$  and  $c$  are integers. [2]