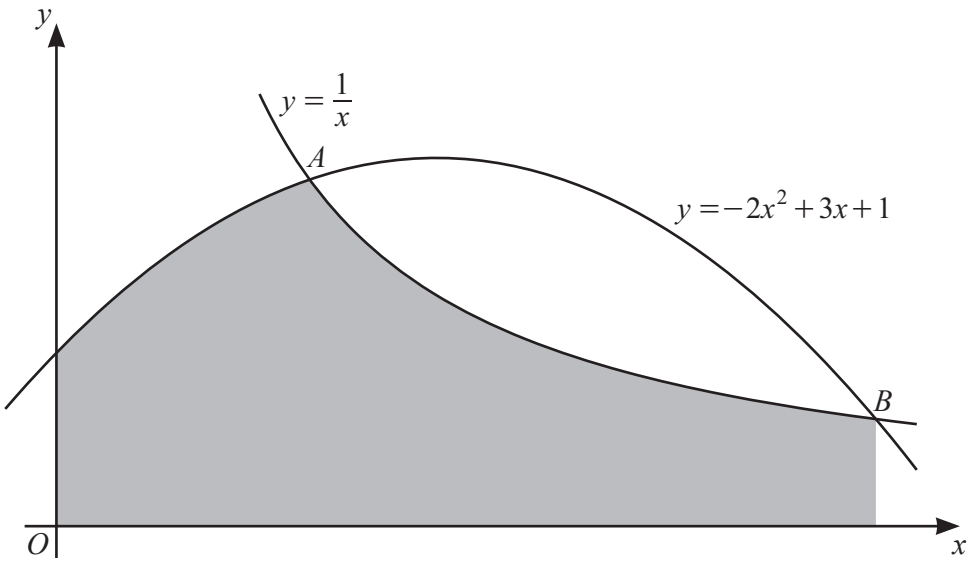
9 The polynomial $\mathrm{p}(x) = 2x^3 - 3x^2 - x + 1$ has a factor $2x - 1$.

(a) Find $\mathrm{p}(x)$ in the form $(2x-1)\mathrm{q}(x)$, where $\mathrm{q}(x)$ is a quadratic factor. [2]



The diagram shows the graph of $y = \frac{1}{x}$ for $x > 0$, and the graph of $y = -2x^2 + 3x + 1$. The curves intersect at the points A and B.

(b) Using your answer to **part (a)**, find the exact x-coordinate of A and of B. [4]

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(c) Find the exact area of the shaded region. [6]

Question 10 is printed on the next page.

10 A curve has equation $y = \dfrac{\left(2x^2+10\right)^{\frac{3}{2}}}{x-1}$ for $x > 1$.

(a) Show that $\dfrac{\mathrm{d}y}{\mathrm{d}x}$ can be written in the form $\dfrac{\left(2x^2+10\right)^{\frac{1}{2}}}{\left(x-1\right)^2}(Ax^2+Bx+C)$, where A, B and C are integers. [5]

(b) Show that, for $x > 1$, the curve has exactly one stationary point. Find the value of x at this stationary point. [4]

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