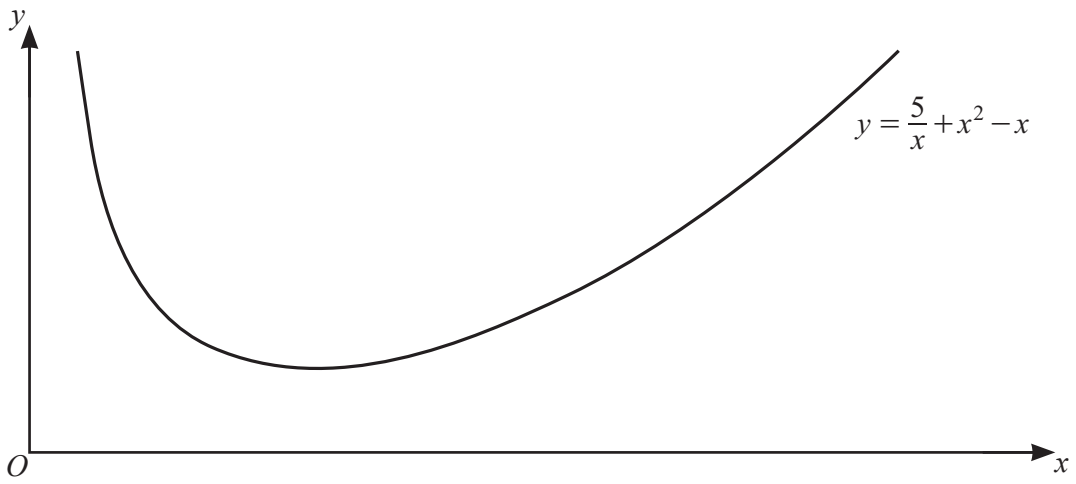
10



The diagram shows part of the curve $y = \frac{5}{x} + x^2 - x$.

(a) Find, in the form $y = mx + c$, the equation of the tangent to the curve at the point where $x = 1$. [5]

(b) Find the exact area enclosed by the curve, the x-axis, and the lines $x = 1$ and $x = 3$. [4]

11 The volume, V, of a cone with base radius r and vertical height h is given by $\frac{1}{3}\pi r^2 h$.
The curved surface area of a cone with base radius r and slant height l is given by $\pi r l$.

A cone has base radius r cm, vertical height h cm and volume V cm^3. The curved surface area of the cone is 4π cm^2.

(a) Show that $h^2 = \frac{16}{r^2} - r^2$. [4]

(b) Show that $V = \frac{\pi}{3}\sqrt{16r^2 - r^6}$. [2]

© UCLES 2021