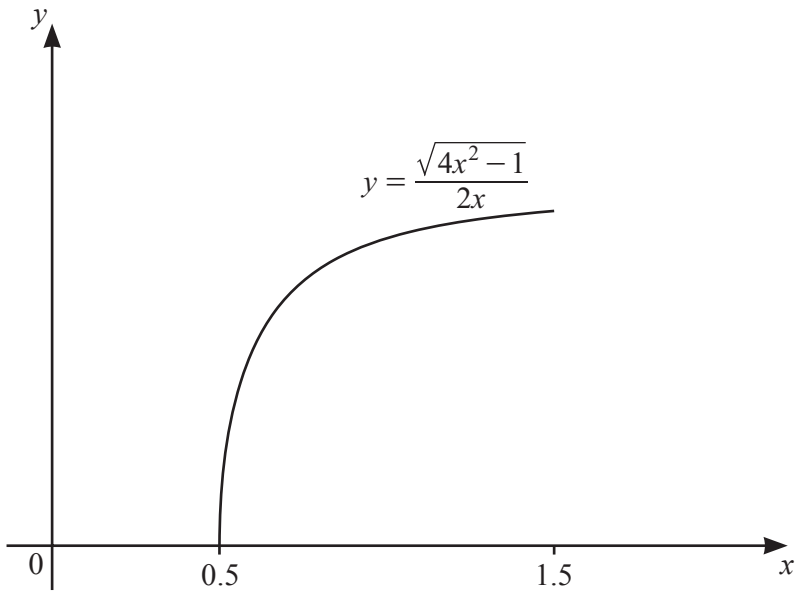
10 The function f is defined by $\mathrm{f}(x) = \dfrac{\sqrt{4x^2 - 1}}{2x}$ for $0.5 \leqslant x \leqslant 1.5$.

The diagram shows a sketch of $y = \mathrm{f}(x)$.



(a) (i) It is given that f^{-1} exists. Find the domain and range of f^{-1}. [3]

(ii) Find an expression for $\mathrm{f}^{-1}(x)$. [3]

(b) The function g is defined by $\mathrm{g}(x) = \mathrm{e}^{x^2}$ for all real x. Show that $\mathrm{gf}(x) = \mathrm{e}^{\left(1-\frac{a}{bx^2}\right)}$, where a and b are integers. [2]

11 (a) (i) Find $\int \frac{1}{(10x-1)^6} \mathrm{d}x$. [2]

(ii) Find $\int \frac{(2x^3+5)^2}{x} \mathrm{d}x$. [3]

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