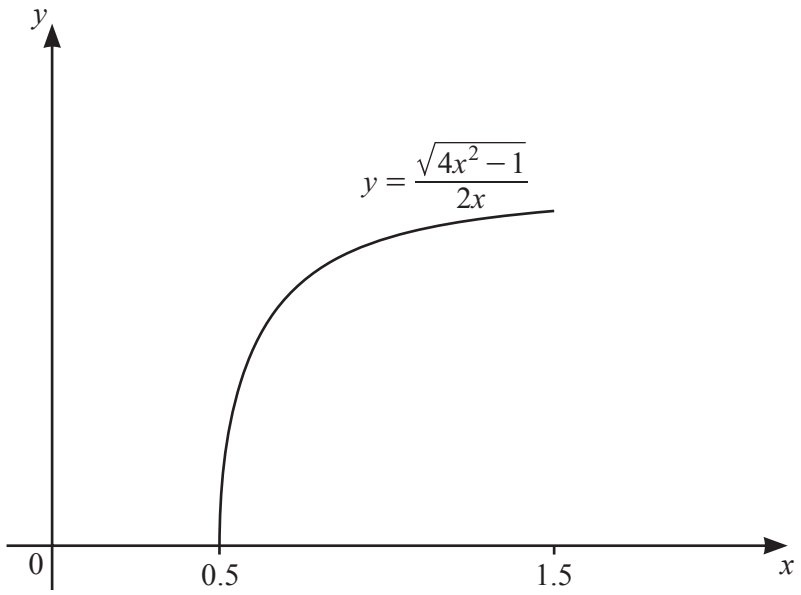
9 **(a)** In the expansion of $\left(2k-\frac{x}{k}\right)^5$, where k is a constant, the coefficient of x^2 is 160. Find the value of k. [3]

(b) **(i)** Find, in ascending powers of x, the first 3 terms in the expansion of $\left(1+3x\right)^6$, simplifying the coefficient of each term. [2]

(ii) When $(1+3x)^6(a+x)^2$ is written in ascending powers of x, the first three terms are $4+68x+bx^2$, where a and b are constants. Find the value of a and of b. [3]

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]