5. The function f is given by

$$f(x) = \frac{1}{\lambda}(x^2 - 4)(x^2 - 25),$$

where x is real and λ is a positive integer.

(a) Sketch the graph of $y = f(x)$ showing clearly where the graph crosses the coordinate axes.

(3)

(b) Find, in terms of λ, the range of f.

(5)

(c) Find the sets of positive integers k and λ such that the equation

$$k = |f(x)|$$

has exactly k distinct real roots.

(9)