6. $f(x) = (2 + kx)^{-4}$ where k is a positive constant

The binomial expansion of f(x), in ascending powers of x, up to and including the term in x^2, is

$$\frac{1}{16} + Ax + \frac{125}{32}x^2$$

where A is a constant.

(a) Find the value of A, giving your answer in simplest form.

(5)

(b) Determine, giving a reason for your answer, whether the binomial expansion for f(x)

is valid when $x = \frac{1}{10}$

(1)