1. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

A sequence u_1, u_2, u_3, is defined by

$$u_1 = 1$$

$$u_{n+1} = k - \frac{8}{u_n} \qquad n \geqslant 1$$

where k is a constant.

(a) Write down expressions for u_2 and u_3 in terms of k.

(2)

Given that $u_3 = 6$

(b) find the possible values of k.

(3)

(Total for Question 1 is 5 marks)

2. Find the first 3 terms in ascending powers of x of

$$\left(2 - \frac{x}{2}\right)^6$$

giving each term in its simplest form.

(4)

(Total for Question 2 is 4 marks)