

11 The n th term of a sequence is u_n

The sequence is defined by

$$u_{n+1} = pu_n + 70$$

where $u_1 = 400$ and p is a constant.

11 (a) Find an expression, in terms of p , for u_2

[1 mark]

11 (b) It is given that $u_3 = 382$

11 (b) (i) Show that p satisfies the equation

$$200p^2 + 35p - 156 = 0$$

[3 marks]

11 (b) (ii) It is given that the sequence is a decreasing sequence.

Find the value of u_4 and the value of u_5

[3 marks]

11 (c) The limit of u_n as n tends to infinity is L

11 (c) (i) Write down an equation for L

[1 mark]

11 (c) (ii) Find the value of L

[1 mark]