

Higher Maths  
SQA 2017 Paper 2  
Question 8



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Sequences may be generated by recurrence relations of the form

$$u_{n+1} = k u_n - 20, u_0 = 5 \text{ where } k \in \mathbb{R}.$$

- (a) Show that  $u_2 = 5k^2 - 20k - 20$ . 2
- (b) Determine the range of values of  $k$  for which  $u_2 < u_0$ . 4
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Answers:

- (a) Find expression for  $u_1$  and use it to obtain and simplify an expression for  $u_2$ .
- (b)  $-1 < k < 5$