

9 The first three terms of an arithmetic sequence are given by

$$2x + 5$$

$$5x + 1$$

$$6x + 7$$

9 (a) Show that $x = 5$ is the only value which gives an arithmetic sequence.

[3 marks]

9 (b) (i) Write down the value of the first term of the sequence.

[1 mark]

9 (b) (ii) Find the value of the common difference of the sequence.

[1 mark]

9 (c) The sum of the first N terms of the arithmetic sequence is S_N where

$$S_N < 100\,000$$

$$S_{N+1} > 100\,000$$

Find the value of N .

[4 marks]