1. The complex number $z = x + iy$ satisfies the equation

$$|z - 3 - 4i| = |z + 1 + i|$$

(a) Determine an equation for the locus of z giving your answer in the form $ax + by + c = 0$ where a, b and c are integers.

(3)

(b) Shade, on an Argand diagram, the region defined by

$$|z - 3 - 4i| \leqslant |z + 1 + i|$$

You do **not** need to determine the coordinates of any intercepts on the coordinate axes.

(1)

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Question 1 continued

(Total for Question 1 is 4 marks)