9. Given that

$$\frac{3z-1}{2} = \frac{\lambda + 5\mathrm{i}}{\lambda - 4\mathrm{i}}$$

where λ is a real constant,

(a) determine z, giving your answer in the form $x + y\mathrm{i}$, where x and y are real and in terms of λ.

(4)

Given also that $\arg z = \frac{\pi}{4}$

(b) find the possible values of λ.

(2)

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Question 9 continued

(Total for Question 9 is 6 marks)