Answer all six questions from this section.

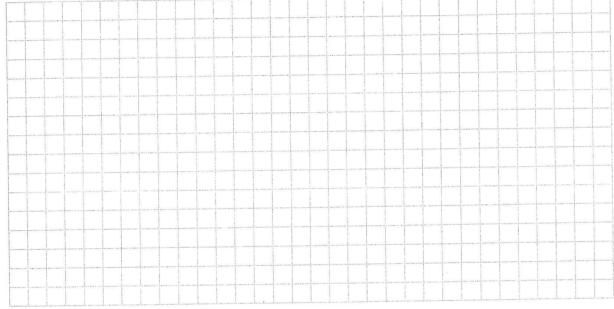
## Question 1

(25 marks)

(a) (-4+3i) is one root of the equation  $az^2+bz+c=0$ , where  $a,b,c\in\mathbb{R}$ , and  $i^2=-1$ . Write the other root.

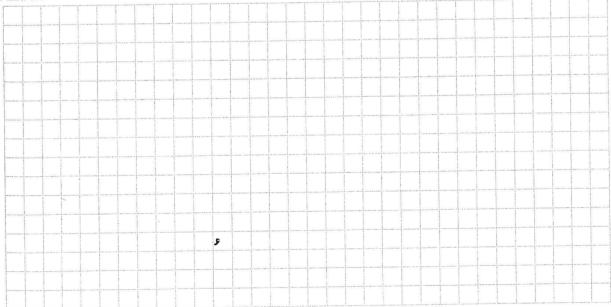


(b) Use De Moivre's Theorem to express  $(1+i)^8$  in its simplest form.



(c) (1+i) is a root of the equation  $z^2 + (-2+i)z + 3 - i = 0$ .

Find its other root in the form m + ni, where  $m, n \in \mathbb{R}$ , and  $i^2 = -1$ .



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