4. **In this question you must show all stages of your working.**

Solutions relying entirely on calculator technology are not acceptable.

The complex number z is defined by

$$z = -3 + 4i$$

(a) Determine $\left|z^2 - 3\right|$

(3)

(b) Express $\frac{50}{z^*}$ in the form kz, where k is a positive integer.

(3)

(c) Hence find the value of $\arg\left(\frac{50}{z^*}\right)$

Give your answer in radians to 3 significant figures.

(2)

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Question 4 continued

(Total for Question 4 is 8 marks)