

2. (a) Sketch, on an Argand diagram, the set of points

$$X = \{z \in \mathbb{C} : |z - 4 - 2i| < 3\} \cap \left\{z \in \mathbb{C} : 0 \leq \arg(z) \leq \frac{\pi}{4}\right\}$$

On your diagram

- shade the part of the diagram that is included in the set
- use solid lines to show the parts of the boundary that are included in the set, and use dashed lines to show the parts of the boundary that are not included in the set

(3)

(b) Show that the complex number $z = 5 + 4i$ is in the set X .

(3)