

## 2.5) Regions in the Argand diagram

## Worked example

On an Argand diagram, shade the region for which

$$|z - 3 + 5i| \leq 4$$

## Your turn

On an Argand diagram, shade the region for which

$$|z + 3 - 5i| \leq 2$$

Inside of solid-lined circle, centre  $(3, -5)$ ,  
radius 2

## Worked example

On an Argand diagram, shade the region for which

$$2 \leq |z - 3 + 5i| \leq 4$$

$$2 < |z - 3 - 5i| \leq 4$$

## Your turn

On an Argand diagram, shade the region for which

$$2 \leq |z + 3 - 5i| < 4$$

Region enclosed between two circles.  
One solid-lined circle centred  $(-3, 5)$  radius 2  
One dotted-lined circle centred  $(-3, 5)$  radius  
4

## Worked example

On an Argand diagram, shade the region for which

$$|z - 3| < |z - 5|$$

$$|z - 3i| > |z + 5|$$

## Your turn

On an Argand diagram, shade the region for which

$$|z + 3| < |z - 5i|$$

Dotted line perpendicular bisector of  $(-3, 0)$  and  $(0, 5)$ . Shaded below the line

## Worked example

On an Argand diagram, shade the region for which

$$\{z \in \mathbb{C}: |z - 4| \leq |z - 8 - 6i|\} \cap \{z \in \mathbb{C}: 0 \leq \arg(z - 2 - 4i) \leq \frac{\pi}{4}\}$$

## Your turn

On an Argand diagram, shade the region for which

$$\{z \in \mathbb{C}: |z - 2| \leq |z - 6 - 8i|\} \cap \{z \in \mathbb{C}: 0 \leq \arg(z - 4 - 2i) \leq \frac{\pi}{2}\}$$

Shaded region in first quadrant enclosed by half lines  $x = 4$  and  $y = 2$  both extending from  $(4, 2)$  and perpendicular bisector of  $(2, 0)$  and  $(6, 8)$   $y = -\frac{1}{2}x + 6$

## Worked example

On an Argand diagram, shade the region for which

$$0 \leq \arg(z - 3 - 5i) \leq \frac{\pi}{4}$$

$$\arg(z - 3 + 5i) > \frac{\pi}{2}$$

## Your turn

On an Argand diagram, shade the region for which

$$0 \leq \arg(z + 3 - 5i) \leq \frac{\pi}{3}$$

Shaded between two solid half-lines.  
First half-line horizontal from point  $(3, -5)$  in  
4<sup>th</sup> quadrant only  
Second half-line from point  $(3, -5)$  at angle  
of  $\frac{\pi}{3}$  to the horizontal