Question 2 **(25 marks)**
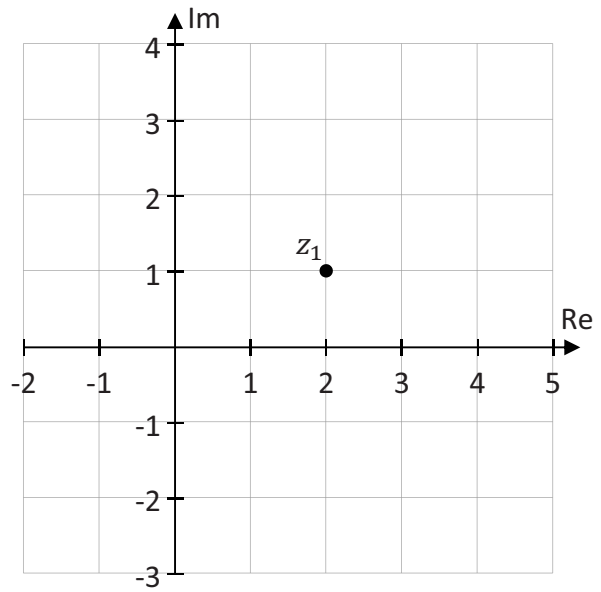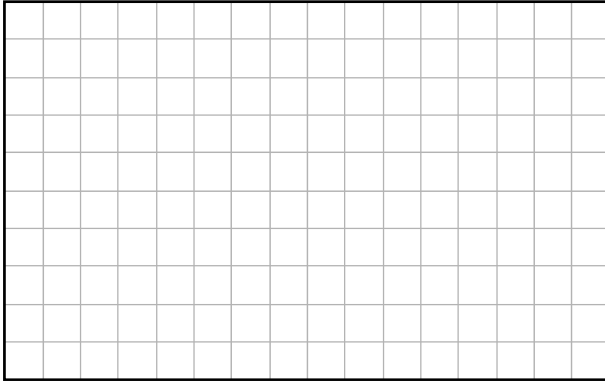
The complex number $z_1 = 2 + i$, where $i^2 = -1$, is shown on the Argand Diagram below.

(a) **(i)** $z_2 = 2z_1$.

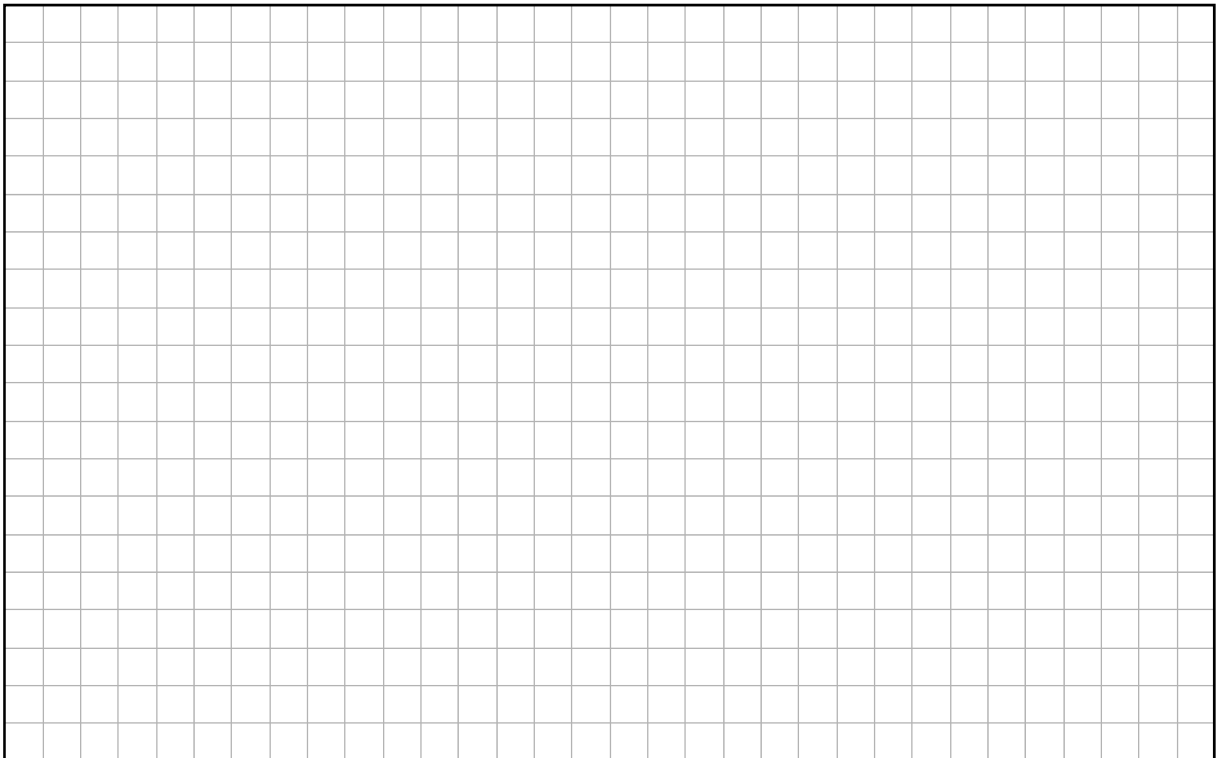Find the value of z_2, and **plot and label** it on the Argand Diagram.

(ii) $\bar{z}_1$ is the complex conjugate of z_1.
Write down the value of $\bar{z}_1$, and **plot and label** it on the Argand Diagram.

$\bar{z}_1 =$ ⬚

(iii) Investigate if $|z_2| = |z_1 + \bar{z}_1|$.

(b) Show that $z_1 = 2 + i$ is a solution of the equation $z^2 - 4z + 5 = 0$.