



Complex Numbers

Past Exam Questions

Maths - Ordinary Level

Question 3

(25 marks)

- (a) Write each of the following complex numbers in the form $a + bi$, where $i^2 = -1$.

$$z_1 = (3 + 2i)(2 - 5i) =$$

$$z_2 = (5 + 4i)(17 - 13i) - (5 + 3i)(17 - 13i) =$$

$$z_3 = \left(\frac{5}{2} + \frac{7}{2}i\right)^2 - \left(\frac{5}{2} + \frac{1}{2}i\right)^2 =$$

$$z_4 = 1 + i + i^2 + i^3 =$$

- (b) Which of z_1 and z_2 above is farther from 0 on an Argand diagram?
Justify your answer.

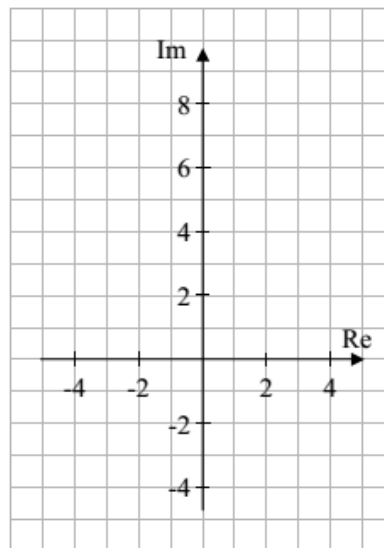
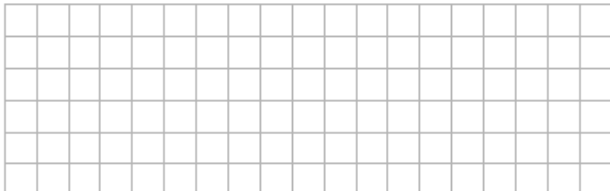
Q3 2012
sample

Question 3

(25 marks)

The complex number $z = 1 - 4i$, where $i^2 = -1$.

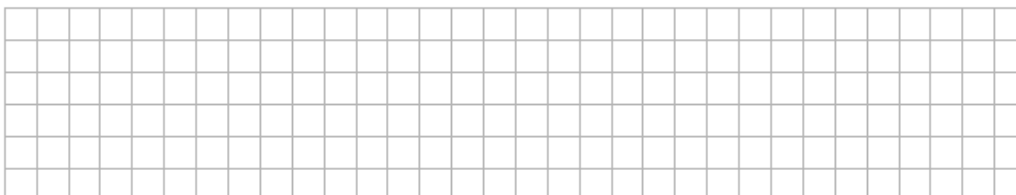
- (a) Plot z and $-2z$ on the Argand diagram.



- (b) Show that $2|z| = |-2z|$.



- (c) What does part (b) tell you about the points you plotted in part (a)?



- (d) Let k be a real number such that $|z + k| = 5$. Find the two possible values of k .

