

## LC 2017: PAPER 1

**QUESTION 2 (25 MARKS)**

**Question 2 (a) (i)**

$$z_1 = 3 - i$$

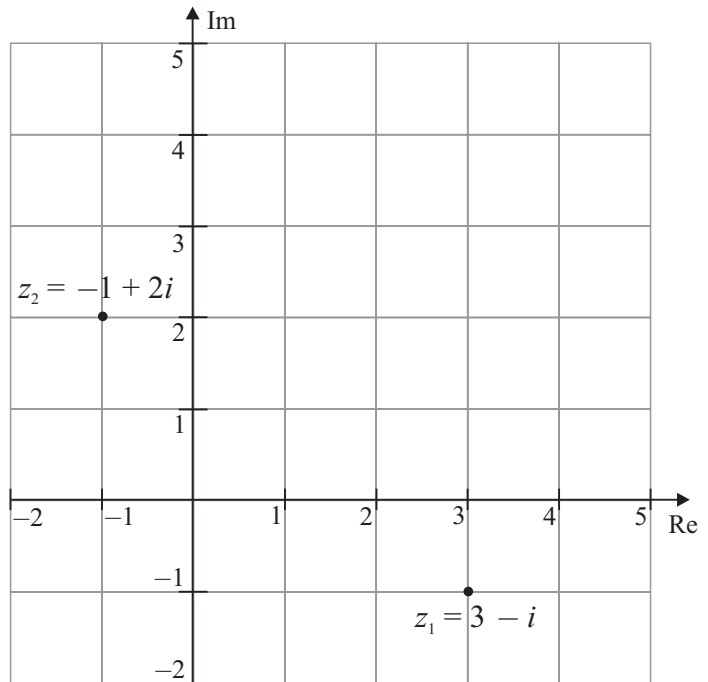
$$a = 3, b = -1$$

**Question 2 (a) (ii)**

$$z_2 = -1 + 2i$$

**Question 2 (a) (iii)**

$$\begin{aligned} \frac{z_1}{z_2} &= \frac{3-i}{-1+2i} = \frac{(3-i)}{(-1+2i)} \times \frac{(-1-2i)}{(-1-2i)} \\ &= \frac{-3-6i+i+2i^2}{1+2i-2i-4i^2} = \frac{-3-6i+i-2}{1+2i-2i+4} \\ &= \frac{-5-5i}{5} \\ &= -1-i \end{aligned}$$



**Question 2 (b)**

$$2z - 6(4 - 6i) = (-1 + i)(4 - 2i)$$

$$2z - 24 + 36i = -4 + 2i + 4i - 2i^2$$

$$2z - 24 + 36i = -4 + 6i + 2$$

$$2z = -2 + 24 + 6i - 36i$$

$$2z = 22 - 30i$$

$$z = 11 - 15i$$


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