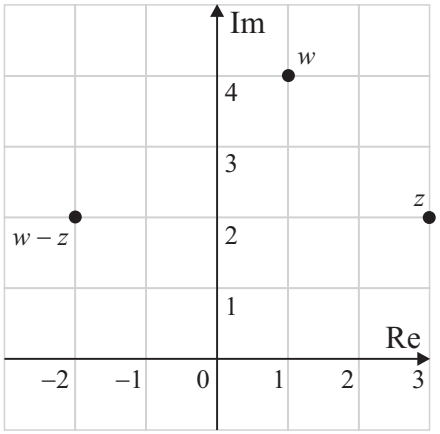
Sample Paper 5: Paper 1

Question 2 (25 marks)

Question 2 (a)



(i) $z = 3 + 2i$

(ii) $w = 1 + 4i$

(iii) $w - z = 1 + 4i - 3 - 2i = -2 + 2i$

Question 2 (b)

$\dfrac{1}{5-12i}$ [Multiply above and below by the conjugate.]

$= \dfrac{1}{(5-12i)} \times \dfrac{(5+12i)}{(5+12i)}$ $\boxed{z = a + ib \Rightarrow \bar{z} = a - ib}$

$= \dfrac{5+12i}{25+60i-60i-144i^2}$

$= \dfrac{5+12i}{25+144} = \dfrac{5+12i}{169}$

$= \dfrac{5}{169} + \dfrac{12}{169}i$

Question 2 (c)

$|k + 6i| = 10$ $\boxed{z = a + ib \Rightarrow |z| = \sqrt{a^2 + b^2}}$

$\sqrt{k^2 + 6^2} = 10$

$k^2 + 36 = 100$

$k^2 = 64$

$k = \pm\sqrt{64} = \pm 8$