# COMPLEX NUMBERS (Q 4, PAPER 1)

## 2001

4 (a) Let $w = 3 - 2i$ where $i^2 = -1$.
Plot
(i) $w$

(ii) $iw$
on an Argand diagram.

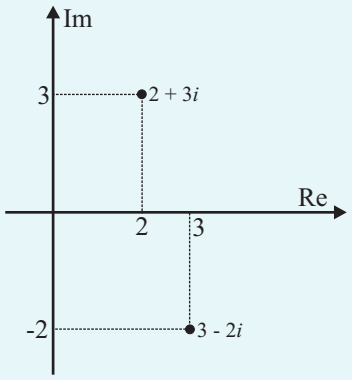
(b) Solve
$$(x + 2yi)(1 - i) = 7 + 5i$$
for real $x$ and for real $y$.

(c) Let $z_1 = 3 + 4i$ and $z_2 = 12 - 5i$.
$\overline{z}_1$ and $\overline{z}_2$ are the complex conjugates of $z_1$ and $z_2$, respectively.
(i) Show that $z_1\overline{z}_2 + \overline{z}_1 z_2$ is a real number.

(ii) Investigate if $|z_1| + |z_2| = |z_1 + z_2|$.

**ANSWERS**

4 (a)




(b) $x = 1, y = 3$

(c) (i) 32 (ii) No