

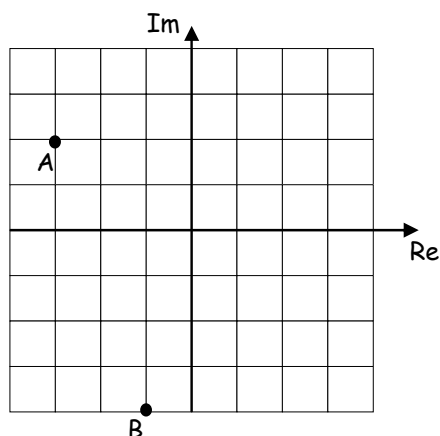
# OCR Further Pure 1

## Complex Numbers

### Section 2: Equations and geometrical representation

#### Multiple Choice Test

Questions 1 and 2 refer to the Argand diagram below.



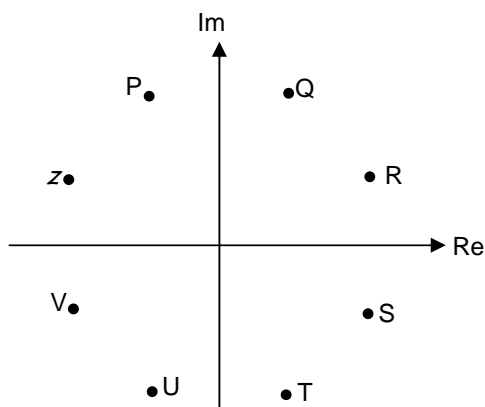
1) In the Argand diagram, the point A represents the complex number

- (a)  $-3 + 2i$
- (b)  $3 - 2i$
- (c)  $2 - 3i$
- (d)  $-2 + 3i$
- (e) I don't know

2) In the Argand diagram, the point B represents the complex number

- (a)  $-4 - i$
- (b)  $-1 - 4i$
- (c)  $1 + 4i$
- (d)  $4 + i$
- (e) I don't know

Questions 3 – 4 refer to the Argand diagram below. The point representing the complex number  $z$  is shown on the diagram.



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- 3) The point which represents  $z^*$  is
- (a) T (b) R  
(c) Q (d) V  
(e) I don't know
- 4) The point which represents  $iz$  is
- (a) P (b) S  
(c) U (d) Q  
(e) I don't know
- 5)  $2 + i$  is a root of  $z^3 - z^2 - 7z + 15 = 0$ . The other roots are
- (a)  $2 + i, 3$  (b)  $2 - i, 3$   
(c)  $2 - i, -3$  (d)  $2 + i, 2 - i$   
(e) I don't know
- 6) The real root of  $z^3 - 4z^2 + 14z - 20 = 0$  is 2. The other roots are
- (a)  $-1 + 3i, -1 - 3i$  (b)  $1 + 3i, 1 - 3i$   
(c)  $2 + 3i, 2 - 3i$  (d)  $-2 + 3i, -2 - 3i$   
(e) I don't know
- 7)  $1 + 2i$  is a root of the cubic equation  $z^3 + az^2 + bz + 5 = 0$ .  
The values of  $a$  and  $b$  are
- (a)  $a = -1, b = 3$  (b)  $a = 1, b = -1$   
(c)  $a = 1, b = 3$  (d)  $a = -1, b = -1$   
(e) I don't know
- 8)  $-2 + i$  is a root of the equation  $z^4 + 2z^3 - z^2 - 2z + 10 = 0$ .  
The other roots are
- (a)  $-2 - i, 1 + 2i, 1 - 2i$  (b)  $2 - i, 1 + i, 1 - i$   
(c)  $-2 - i, 2 - i, 2 + i$  (d)  $-2 - i, 1 + i, 1 - i$   
(e) I don't know

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9) The equation  $z^4 + z^3 + 2z^2 + 4z - 8 = 0$  has two real roots. The roots of the equation are

(a)  $-1, 2, 1 + i, 1 - i$

(b)  $1, -2, 2i, -2i$

(c)  $1, -2, 1 + i, 1 - i$

(d)  $-1, 2, 2i, -2i$

(e) I don't know

10) The square roots of the complex number  $5 + 12i$  are

(a)  $2 + 3i$  and  $-2 - 3i$

(b)  $3 - 2i$  and  $-3 + 2i$

(c)  $3 + 2i$  and  $-3 - 2i$

(d)  $2 - 3i$  and  $-2 + 3i$

(e) I don't know