

EdExcel Further Pure 1

Complex Numbers

Section 3: Complex numbers and equations

Multiple Choice Test

- 1) The real numbers a and b that satisfy the equation

$$a + 3i - 2 + bi = b - i$$

are

- (a) $a = 2, b = -4$ (b) $a = -2, b = -4$
(c) $a = -2, b = -2$ (d) $a = 2, b = -2$
(e) I don't know

- 2) The real numbers a and b that satisfy the equation

$$a(2 - i) + b(1 + 4i) = 4 - 11i$$

are

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

- 3) The square roots of the complex number $8 + 6i$ are

- (a) $1 - 3i$ and $-1 + 3i$ (b) $3 - i$ and $-3 + i$
(c) $1 + 3i$ and $-1 - 3i$ (d) $3 + i$ and $-3 - i$
(e) I don't know

- 4) The square roots of the complex number $5 - 12i$ are

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

- 5) Which of the following groups of numbers could be the roots of a polynomial equation with real coefficients?

- (i) 3, 4, 5
(ii) $1 + i, 2, 4$
(iii) $1 - i, i, 1$
(iv) $2, 1 + i, 1 - i$

- (a) (i), (iii) and (iv) (b) (i) only
(c) (i) and (iv) (d) all of them
(e) I don't know

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6) $2 + i$ 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

7) The real root of $z^3 - 4z^2 + 14z - 20 = 0$ is 2. The other roots are

- (a) $2 + 3i, 2 - 3i$ (b) $-1 + 3i, -1 - 3i$
(c) $1 + 3i, 1 - 3i$ (d) $-2 + 3i, -2 - 3i$
(e) I don't know

8) $1 + 2i$ 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

9) $-2 + i$ is a root of the equation $z^4 + 2z^3 - z^2 - 2z + 10 = 0$.
The other roots are

- (a) $2 - i, 1 + i, 1 - i$ (b) $-2 - i, 1 + i, 1 - i$
(c) $-2 - i, 2 - i, 2 + i$ (d) $-2 - i, 1 + 2i, 1 - 2i$
(e) I don't know

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

- (a) $-1, 2, 2i, -2i$ (b) $-1, 2, 1 + i, 1 - i$
(c) $1, -2, 1 + i, 1 - i$ (d) $1, -2, 2i, -2i$
(e) I don't know