

OCR Further Pure 1

Complex Numbers

Section 1: Introduction to complex numbers

Multiple Choice Test

1) $(3 + 4i) - (2 - i) =$

- (a) $5 + 3i$ (b) $5 + 5i$
(c) $1 + 5i$ (d) $1 + 3i$
(e) I don't know

2) $(2 + i)(3 - 2i) =$

- (a) $4 + 5i$ (b) $8 + 5i$
(c) $4 - i$ (d) $8 - i$
(e) I don't know

3) $[(1 - 2i) + (1 + i)](-3 + i) =$

- (a) $5 - 5i$ (b) $-7 - i$
(c) $-7 + 5i$ (d) $-5 + 5i$
(e) I don't know

4) The roots of the equation
 $z^2 + 6z + 10 = 0$
are

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

5) Given that $p + qi = \frac{1}{12 - 5i}$, the values of p and q are given by

- (a) $p = \frac{12}{119}, q = \frac{5}{119}$ (b) $p = \frac{12}{169}, q = -\frac{5}{169}$
(c) $p = \frac{12}{169}, q = \frac{5}{169}$ (d) $p = \frac{12}{119}, q = -\frac{5}{119}$
(e) I don't know

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6) Which of the following complex numbers is not equal to the others?

(a) $\frac{13}{2+3i}$

(b) $\frac{13}{2-3i}$

(c) $2-3i$

(d) $\frac{3+2i}{i}$

(e) I don't know

7) $z = \frac{3+4i}{2-3i}$. The complex number w which satisfies the equation $zw = 1$ is

(a) $w = \frac{6+17i}{25}$

(b) $w = \frac{-6-17i}{25}$

(c) $w = \frac{-6-17i}{5}$

(d) $w = \frac{6+17i}{5}$

(e) I don't know

8) The solution of the equation

$$(3-i)(z+4-2i) = 10+20i$$

is

(a) $z = 46 - 52i$

(b) $z = 1 - 3i$

(c) $z = -3 + 9i$

(d) $z = 5 + 5i$

(e) I don't know

9) Which of the following is NOT true?

(a) $\frac{1}{i} + i^3 = 0$

(b) $\frac{1}{i^3} - i = 0$

(c) $i^4 = 1$

(d) $\frac{1}{i^2} = i^2$

(e) I don't know

10) Which of the following statements is NOT true?

(a) $z - z^*$ is pure imaginary

(b) $z + z^*$ is real

(c) zz^* is real

(d) $\frac{z}{z^*}$ is real

(e) I don't know