OCR Further Pure 1

Complex Numbers

Section 3: Modulus and argument

Multiple Choice Test

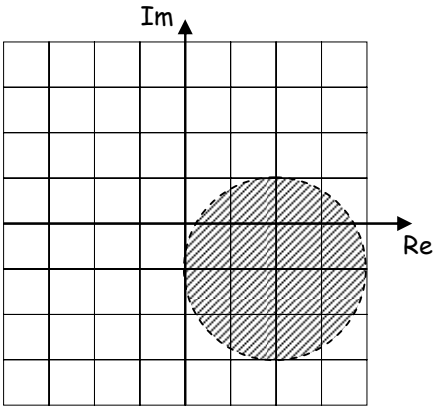
1) The modulus of the complex number $z = 2 - 5i$ is

(a) $\sqrt{7}$
(b) 29
(c) 7
(d) $\sqrt{29}$
(e) I don't know

2) The set of points for which $|z - 2 + 3i| = 4$ is

(a) a circle, centre -2 + 3i, radius 2
(b) a circle, centre 2 – 3i, radius 2
(c) a circle, centre -2 + 3i, radius 4
(d) a circle, centre 2 – 3i, radius 4
(e) I don't know

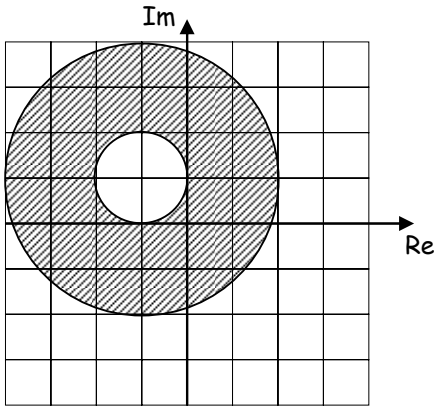
3)



The shaded area in the Argand diagram represents the points z for which

(a) $|z - 2 + i| \leq 2$
(b) $|z - 2 + i| < 2$
(c) $|z + 2 - i| < 2$
(d) $|z + 2 - i| \leq 2$
(e) I don't know

4)



The shaded area in the Argand diagram above represents the points z for which

(a) $2 \leq |z + 1 - i| \leq 6$
(b) $1 \leq |z + 1 - i| \leq 3$
(c) $2 \leq |z - 1 + i| \leq 6$
(d) $1 \leq |z - 1 + i| \leq 3$
(e) I don't know

5) The principal argument of the complex number $-1 + \sqrt{3}\,i$ is

(a) $\frac{2\pi}{3}$
(b) $-\frac{2\pi}{3}$
(c) $\frac{\pi}{3}$
(d) $-\frac{\pi}{3}$
(e) I don't know

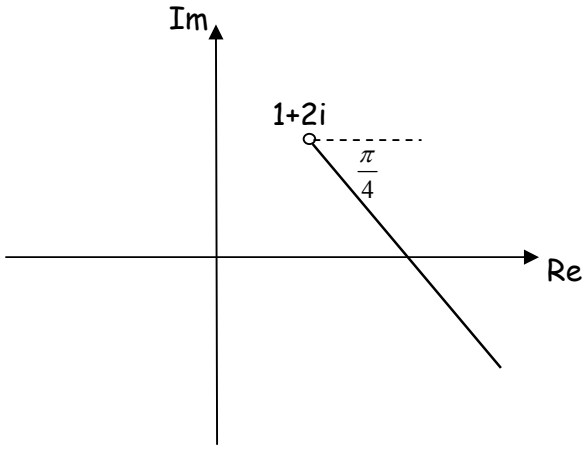
6) The principal argument of the complex number $2 - 2i$ is

(a) $-\frac{\pi}{4}$
(b) $-\frac{3\pi}{4}$
(c) $\frac{\pi}{4}$
(d) $\frac{3\pi}{4}$
(e) I don't know

7) The complex number with modulus 2 and argument -1.5 is

(a) –0.14 + 1. 99i
(b) 1.99 – 0.14i
(c) 0.14 – 1.99i
(d) –1.99 +0.14i
(e) I don't know

8)



The bold half-line in the diagram above shows the set of points z for which

(a) $\arg(z+1+2\mathrm{i}) = \frac{\pi}{4}$

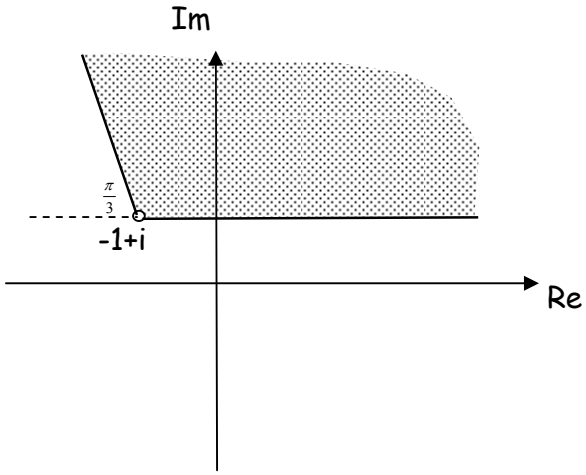
(b) $\arg(z-1-2\mathrm{i}) = \frac{\pi}{4}$

(c) $\arg(z+1+2\mathrm{i}) = -\frac{\pi}{4}$

(d) $\arg(z-1-2\mathrm{i}) = -\frac{\pi}{4}$

(f) I don't know

9)



The shaded area in the diagram above shows the set of points z for which

(a) $0 \le \arg(z+1-\mathrm{i}) \le \frac{2\pi}{3}$

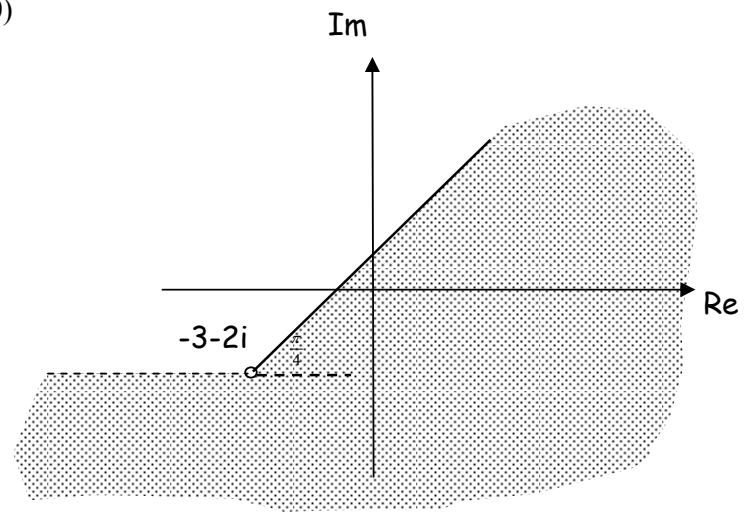
(b) $\arg(z-1+\mathrm{i}) \le \frac{2\pi}{3}$

(c) $0 \le \arg(z-1+\mathrm{i}) \le \frac{2\pi}{3}$

(d) $\arg(z+1-\mathrm{i}) \le \frac{2\pi}{3}$

(f) I don't know

10)



The shaded area in the diagram above shows the set of points z for which

(a) $\arg(z-3-2\mathrm{i}) \geq \frac{\pi}{4}$

(b) $\arg(z-3-2\mathrm{i}) \leq \frac{\pi}{4}$

(c) $\arg(z+3+2\mathrm{i}) \geq \frac{\pi}{4}$

(d) $\arg(z+3+2\mathrm{i}) \leq \frac{\pi}{4}$

(e) I don't know