

Zadatak 14. Odredi modul i argument i zapiši u trigonometrijskom obliku sljedeće brojeve:

- 1) i ; 2) $-2i$; 3) 4 ;
 4) -6 ; 5) $-1 + i$; 6) $-1 - i\sqrt{3}$;
 7) $1 + 2i$; 8) $3 - 2i$.

Rješenje.

$$1) z = i \implies a = 0, b = 1, r = |z| = 1, \operatorname{tg} \varphi = \frac{1}{0} = \infty \implies \varphi = \frac{\pi}{2} \\ \implies z = \cos \frac{\pi}{2} + i \sin \frac{\pi}{2};$$

$$2) z = -2i \implies a = 0, b = -2, r = |z| = \sqrt{0^2 + 2^2} = 2, \\ \operatorname{tg} \varphi = \frac{-2}{0} = \infty \implies \varphi = \frac{3\pi}{2} \implies z = 2 \left(\cos \frac{3\pi}{2} + i \sin \frac{3\pi}{2} \right);$$

$$3) z = 4 \implies a = 4, b = 0, r = |z| = 4, \operatorname{tg} \varphi = \frac{0}{4} = 0 \implies \varphi = 0 \\ \implies z = 4(\cos 0 + i \sin 0);$$

$$4) z = -6 \implies a = -6, b = 0, r = |z| = 6, \operatorname{tg} \varphi = \frac{0}{-6} = 0 \\ \implies \varphi = \pi \implies z = 6(\cos \pi + i \sin \pi);$$

$$5) z = -1 + i \implies a = -1, b = 1, r = |z| = \sqrt{1 + 1} = \sqrt{2}, \\ \operatorname{tg} \varphi = \frac{1}{-1} = -1 \implies \varphi = \frac{3\pi}{4} \implies z = \sqrt{2} \left(\cos \frac{3\pi}{4} + i \sin \frac{3\pi}{4} \right);$$

$$6) z = -1 - i\sqrt{3} \implies a = -1, b = -\sqrt{3}, r = |z| = \sqrt{1 + 3} = 2, \\ \operatorname{tg} \varphi = \frac{-\sqrt{3}}{-1} \implies \varphi = \frac{4\pi}{3} \\ \implies z = 2 \left(\cos \frac{4\pi}{3} + i \sin \frac{4\pi}{3} \right);$$

$$7) z = 1 + 2i \implies a = 1, b = 2, r = |z| = \sqrt{1 + 4} = \sqrt{5}, \\ \operatorname{tg} \varphi = \frac{2}{1} = 2 \implies \varphi = 63^\circ 26' 06'' \\ \implies z = \sqrt{5}(\cos 63^\circ 26' 06'' + i \sin 63^\circ 26' 06'');$$

$$8) z = 3 - 2i \implies a = 3, b = -2, r = |z| = \sqrt{9 + 4} = \sqrt{13}, \\ \operatorname{tg} \varphi = \frac{-2}{3} = -\frac{2}{3} \implies \varphi = 326^\circ 18' 36'' \\ \implies z = \sqrt{13}(\cos 326^\circ 18' 36'' + i \sin 326^\circ 18' 36'').$$