Zadatak 19. Prikaži u trigonometrijskom obliku kompleksne brojeve $z = 1 - i\sqrt{3}$ i $w = -3\cos\frac{\pi}{4} - 3i\sin\frac{3\pi}{4}$.

Izračunaj z^5 i $\sqrt[4]{w}$.

Rješenje. $z = 1 - i\sqrt{3}$,

$r = \sqrt{1+3} = 2$;

$$\left.\begin{aligned} 2\cos\varphi &= 1, \quad \cos\varphi = \frac{1}{2}; \\ 2\sin\varphi &= -\sqrt{3}, \quad \sin\varphi = -\frac{\sqrt{3}}{2}. \end{aligned}\right\} \Longrightarrow \varphi = \frac{5\pi}{3};$$

$$z = 2\left(\cos\frac{5\pi}{3} + i\sin\frac{5\pi}{3}\right).$$

$$w = -3\cos\frac{\pi}{4} - 3i\sin\frac{3\pi}{4} = -\frac{3\sqrt{2}}{2} - \frac{3\sqrt{2}}{2}i;$$

$$r = \sqrt{\frac{18}{4} + \frac{18}{4}} = 3;$$

$$\left.\begin{aligned} 3\cos\varphi &= -\frac{3\sqrt{2}}{2}, \quad \cos\varphi = -\frac{\sqrt{2}}{2}; \\ 3\sin\varphi &= -\frac{3\sqrt{2}}{2}, \quad \sin\varphi = -\frac{\sqrt{2}}{2} \end{aligned}\right\} \Longrightarrow \varphi = \frac{5\pi}{4};$$

$$w = 3\left(\cos\frac{5\pi}{4} + i\sin\frac{5\pi}{4}\right).$$