Zadatak 2. Izračunaj:

1) $\left(\cos\frac{\pi}{12}+i\sin\frac{\pi}{12}\right)^6$; **2)** $\left[2(\cos 18^\circ+i\sin 18^\circ)\right]^{10}$;

3) $\left[\sqrt{3}\left(\cos\frac{\pi}{15}+i\sin\frac{\pi}{15}\right)\right]^5$; **4)** $\left[\sqrt[3]{2}\left(\cos\frac{5\pi}{12}+i\sin\frac{5\pi}{12}\right)\right]^{42}$.

Rješenje. **1)** $\left(\cos\frac{\pi}{12}+i\sin\frac{\pi}{12}\right)^6=\cos\frac{6\pi}{12}+i\sin\frac{6\pi}{12}=\cos\frac{\pi}{2}+i\sin\frac{\pi}{2}=i$.

2) $\left[2(\cos 18^\circ+i\sin 18^\circ)\right]^{10}=2^{10}(\cos 180^\circ+i\sin 180^\circ)=-2^{10}$.

3) $\left[\sqrt{3}\left(\cos\frac{\pi}{15}+i\sin\frac{\pi}{15}\right)\right]^5=\sqrt{3^5}\left(\cos\frac{5\pi}{15}+i\sin\frac{5\pi}{15}\right)=9\sqrt{3}(\cos\frac{\pi}{3}+i\sin\frac{\pi}{3})=\frac{9}{2}\sqrt{3}+i\frac{27}{2}$.

4) $\left[\sqrt[3]{2}\left(\cos\frac{5\pi}{12}+i\sin\frac{5\pi}{12}\right)\right]^{42}=\sqrt[3]{2^{42}}\left(\cos\frac{35\pi}{2}+i\sin\frac{35\pi}{2}\right)=2^{14}(\cos\frac{3\pi}{2}+i\sin\frac{3\pi}{2})=-2^{14}i$.