Zadatak 16. Kompleksne brojeve

1) $z_1 = 2\cos\frac{7\pi}{4} - 2i\sin\frac{\pi}{4}$;

2) $z_2 = -\cos\frac{\pi}{17} + i\sin\frac{\pi}{17}$;

3) $z_3 = -2\left(\cos\frac{\pi}{8} + i\sin\frac{\pi}{8}\right)$;

4) $z_4 = -3\left(\cos\frac{\pi}{7} - i\sin\frac{\pi}{7}\right)$;

5) $z_5 = 1 + \cos\frac{2\pi}{5} + i\sin\frac{2\pi}{5}$

zapiši u trigonometrijskom obliku.

Rješenje. **1)** $z_1 = 2\cos\frac{7\pi}{4} - 2i\sin\frac{\pi}{4} = 2\left(\cos\frac{7\pi}{4} + i\sin\left(-\frac{\pi}{4}\right)\right) = 2\left(\cos\frac{7\pi}{4} + i\sin\frac{7\pi}{4}\right)$;

2) $z_2 = -\cos\frac{\pi}{17} + i\sin\frac{\pi}{17} = \cos\frac{16\pi}{17} + i\sin\frac{16\pi}{17}$;

3) $z_3 = -2\left(\cos\frac{\pi}{8} + i\sin\frac{\pi}{8}\right) = 2\left(-\cos\frac{\pi}{8} - i\sin\frac{\pi}{8}\right) = 2\left(\cos\frac{9\pi}{8} + i\sin\frac{9\pi}{8}\right)$;

4) $z_4 = -3\left(\cos\frac{\pi}{7} - i\sin\frac{\pi}{7}\right) = 3\left(-\cos\frac{\pi}{7} + i\sin\frac{\pi}{7}\right) = 3\left(\cos\frac{6\pi}{7} + i\sin\frac{6\pi}{7}\right)$;

5) $z_5 = 1 + \cos\frac{2\pi}{5} + i\sin\frac{2\pi}{5} = 1 + \cos^2\frac{\pi}{5} - \sin^2\frac{\pi}{5} + 2i\sin\frac{\pi}{5}\cos\frac{\pi}{5} = 2\cos^2\frac{\pi}{5} + 2i\sin\frac{\pi}{5}\cos\frac{\pi}{5} = 2\cos\frac{\pi}{5}\left(\cos\frac{\pi}{5} + i\sin\frac{\pi}{5}\right)$.