

77.11.1-8

✓

次の計算をせよ。

$$(1) \left( \cos \frac{\pi}{6} + i \sin \frac{\pi}{6} \right)^7$$

$$(2) \left\{ \sqrt{2} \left( \cos \frac{\pi}{18} + i \sin \frac{\pi}{18} \right) \right\}^{12}$$

$$\begin{aligned} (1) \quad \text{与式} &= \left( \cos \frac{7\pi}{6} + i \sin \frac{7\pi}{6} \right) \\ &= -\frac{\sqrt{3}}{2} - \frac{1}{2}i \end{aligned}$$

$$\begin{aligned} (2) \quad \text{与式} &= \sqrt{2}^{12} \left( \cos \frac{12\pi}{18} + i \sin \frac{12\pi}{18} \right) \\ &= 2^6 \left( \cos \frac{2\pi}{3} + i \sin \frac{2\pi}{3} \right) \\ &= 64 \left( -\frac{1}{2} + \frac{\sqrt{3}}{2}i \right) \\ &= -32 + 32\sqrt{3}i \end{aligned}$$