

$$e^z = 1 \iff \frac{z}{2\pi i} \in \mathbb{Z} \quad k \in \mathbb{Z}$$

$$e^z = e^{x+iy} = e^x \cdot (\cos y + i \sin y) = 1 \implies z = 2k\pi i$$

$\frac{z}{2\pi i} = k \in \mathbb{Z} \iff z = 2k\pi i$

$$\begin{cases} \cos y = 1 \\ \sin y = 0 \end{cases} \implies y = 2k\pi$$

$$y \in \mathbb{R} \quad [9.2a)$$