

MTH 317/617

Quiz #2

1. Find all possible solutions in \mathbb{C} to the equation

$$z^3 = 8i.$$

You can express your solutions in exponential form.

$$\begin{aligned} z &= (8i)^{1/3} = (8e^{i\pi/2 + 2n\pi i})^{1/3} \\ &= 2e^{i\pi/6 + 2n\pi i/3}, \\ &= 2e^{i(6\pi + 4n\pi)/6}, \\ &= 2e^{i\pi(1+4n)/6}, \end{aligned}$$

where $n \in \mathbb{Z}$.