

1. 請框出答案. 2. 不可使用手機、計算器, 禁止作弊!

1. Express z/w in the form $a + bi$, where $a, b \in \mathbb{R}$, if

$$z = 2 + 3i, w = 5 - i$$

Answer: $z/w =$ $\frac{7+17i}{26}$

$$\begin{aligned} 1/w &= \frac{\bar{w}}{|w|^2} = \frac{5+i}{25+1} \\ z/w &= \frac{(2+3i)(5+i)}{25+1} = \frac{7+17i}{26} \end{aligned}$$

2. Find the six sixth roots of $64i$.

$$\begin{aligned} 64i &= 2^6 \left(\cos\left(\frac{\pi}{2}\right) + i \sin\left(\frac{\pi}{2}\right) \right) \\ w_k &= 2 \left(\cos\left(\frac{\pi}{12} + \frac{2k\pi}{6}\right) + i \sin\left(\frac{\pi}{12} + \frac{2k\pi}{6}\right) \right) \end{aligned}$$