

$$\begin{aligned} i) \quad (1+i)^4 &= (1+i)^2(1+i)^2 \\ &= (1+2i+i^2)(1+2i+i^2) \\ &= (1-1+2i)^2 \\ &= (2i)^2 = 2i \cdot 2i = 4i^2 = -4 \end{aligned}$$