

2021 Worksheet 1

Year 13 Mathematics

1. Find

(a) $\sqrt{-25}$ (b) $\sqrt{-9} + i$ (c) $3i \times 5i$ (d) **Real part of** $z = 1 - 2i$

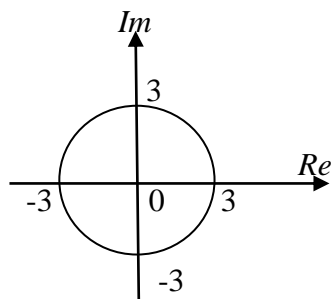
2. Simplify. Leave your answers in **polar form**

(a) $5cis45^\circ \times 3cis30^\circ$ (b) $5cis\frac{\pi}{2} \times \left(3cis\frac{\pi}{2}\right)^2$
(c) $5cis\left(\frac{\pi}{2}\right) \div 3cis\pi$ (d) $\frac{(\cos30^\circ + i\sin30^\circ)^3}{(\cos20^\circ + i\sin20^\circ)^2}$

3. Evaluate $(-1+i)^{12}$

4. Solve the equation $z^4 = 16i$. Leave your answers in **polar form**.

5. Give the equation of the relation below.



6. Simplify

(a) $\frac{5}{i^2}$ (b) $i^3 + i$ (c) $\frac{10}{3-i}$ (d) $(2+i)(3-4i)$