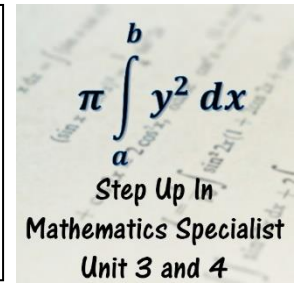# 1.4 Roots of Complex Numbers
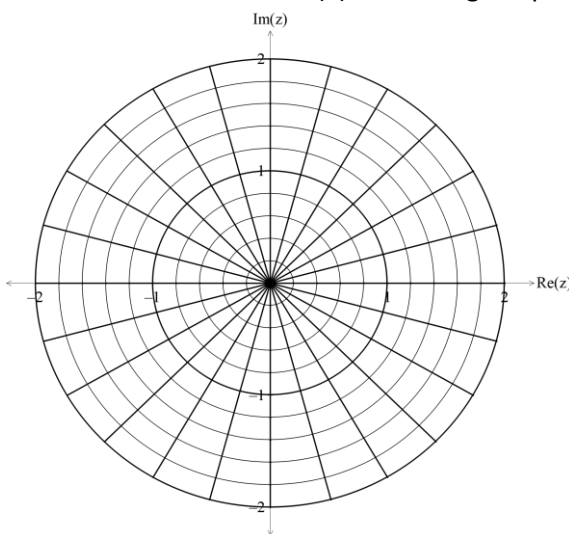
Problems Worksheet

1. By way of polynomial factorisation, determine the three cube-roots of 1, giving your answers in the form $a + bi$.
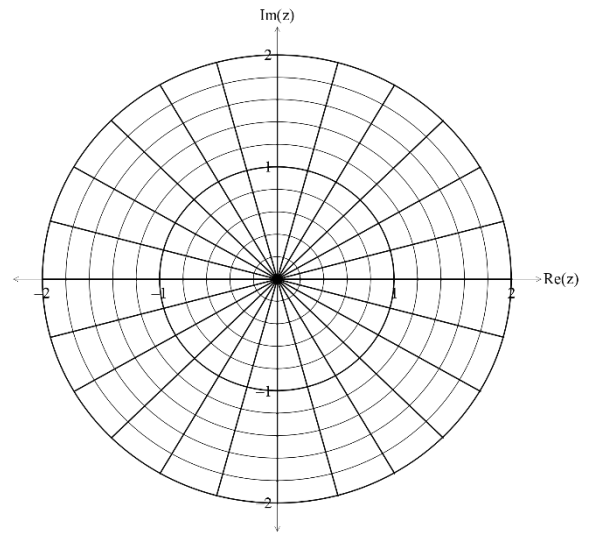
2.

    a. Determine all solutions to the equation $z^5 = 1$.

    b. Sketch the solutions from (a) on the Argand plane provided.
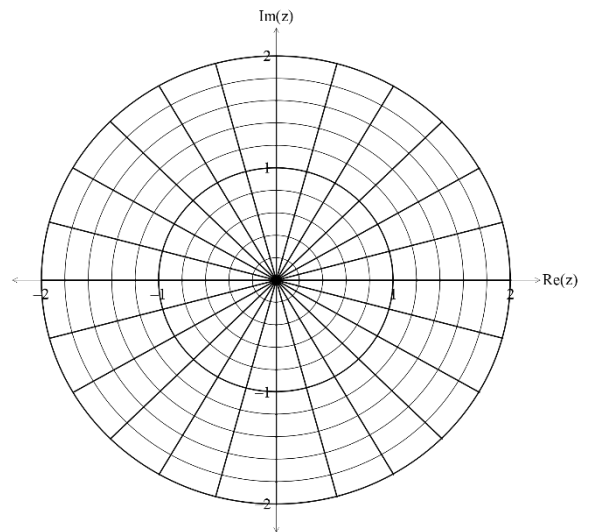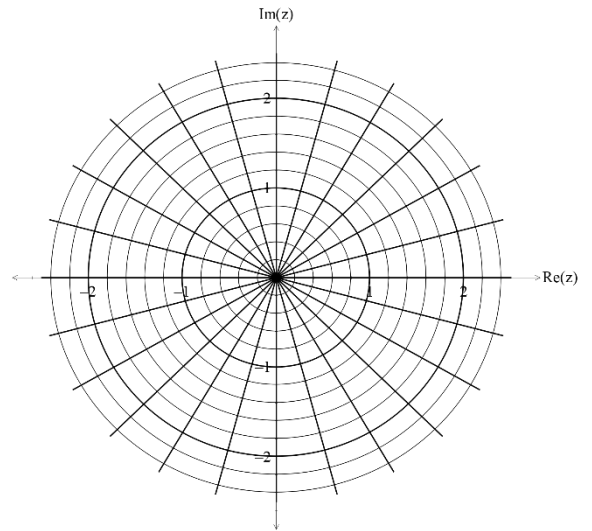
3.

a. Determine the three cube-roots of -1 and plot them on the Argand plane provided.

b. Determine all sixth-roots of -1 and plot them on the Argand plane provided.

4. Determine the sixth roots of $64i$ and plot them on the Argand plane provided.

5. Determine the cube-roots of $-54\sqrt{2}i$, leaving your answers in polar form.