

## Exercise 7

Let  $z$  be a nonzero complex number and  $n$  a negative integer ( $n = -1, -2, \dots$ ). Also, write  $z = re^{i\theta}$  and  $m = -n = 1, 2, \dots$ . Using the expressions

$$z^m = r^m e^{im\theta} \quad \text{and} \quad z^{-1} = \left(\frac{1}{r}\right) e^{i(-\theta)},$$

verify that  $(z^m)^{-1} = (z^{-1})^m$  and hence that the definition  $z^n = (z^{-1})^m$  in Sec. 7 could have been written alternatively as  $z^n = (z^m)^{-1}$ .