Given a complex number z, to determine the n-th roots of z, $z^{1/n}$:

1. Write the number in polar form, either $re^{i\theta}$ or $r(\cos(\theta) + i\sin(\theta))$.

2. Add an arbitrary multiple of 2π to the argument:

$$z = re^{i\theta + 2k\pi i} = r(\cos(\theta+2k\pi) + i\sin(\theta+2k\pi)).$$

3. Apply the usual rules of algebra to the exponential polar form:

$$z^{1/n} = \left(re^{i\theta + 2k\pi i}\right)^{1/n} = re^{i\theta/n + 2k\pi i/n} = r(\cos(\theta/n+2k\pi/n) + i\sin(\theta/n+2k\pi/n)).$$

4. Determine values of k which give all the distinct roots; if n is a positive integer, one can choose

$$k = 0, 1, 2, \dots , n-1,$$

but these are not necessarily the best values of k to choose.
In any case, however, if n is a positive integer, there should be n distinct n-th roots.