

PROBLEM:

Solve the following complex-valued equations. Reduce the answers to a simple numerical form.

(a) Find all solutions of $z^7 = -j$. Express your answers for z in polar form. How many *different* solutions exist?

(b) The following equation depends on n and F_s . Whenever F_s is assigned a value, the equation must then be true for all n .

$$e^{j(\pi/7)n} = e^{j7\pi n/F_s} \quad \text{for all } n$$

Find all possible values for F_s for which the equation will be true.