

1. Find the array factor for the array

$$\begin{array}{c} \uparrow \quad \uparrow \\ \leftarrow \lambda/4 \rightarrow \end{array}$$

Find the array pattern (element pattern  $\times$  array factor).

2. For a 4 element array with 10 dB side lobe level, what is the narrowest possible main beam width?

3. Estimate

$$\int_0^{2\pi} (\sin \phi + \cos \phi) e^{iA \sin \phi} d\phi$$

4. Find an equivalent current on the  $z=0$  plane that radiates  $\vec{H} = \hat{x} 3e^{ikz}$  for  $z < 0$ .