



(REPORT 2)

1. The normalized radiation intensity of an antenna is symmetric, and it can be approximated by

$$U(\theta) = \begin{cases} 1 & 0^\circ \leq \theta < 30^\circ \\ \frac{\cos(\theta)}{0.866} & 30^\circ \leq \theta < 90^\circ \\ 0 & 90^\circ \leq \theta \leq 180^\circ \end{cases}$$

And it is independent of ϕ . Find the

- (a) Exact directivity by integrating the function
(b) Approximate directivity using Kraus' formula.

2. Repeat Problem 8 when

$$E = \cos \left[\frac{\pi}{4} (\cos \theta + 1) \right] \frac{e^{-jkr}}{r}, \quad 0 \leq \theta \leq \pi$$

Good Luck