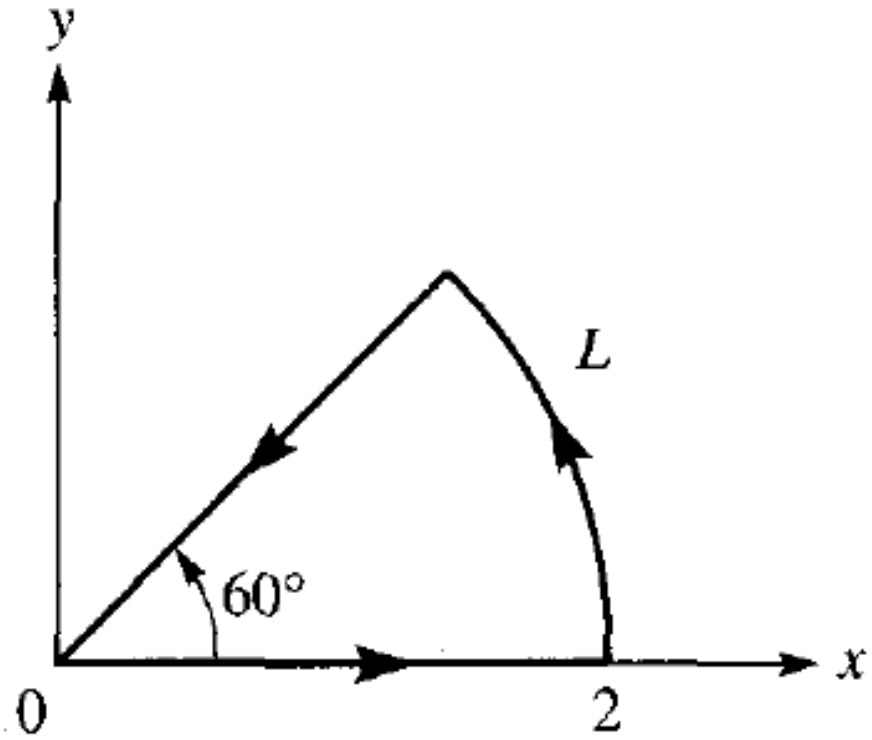
PROBLEM SESSION-1

Problem-1

- Calculate the circulation of:

$$\mathbf{A} = \rho cos\emptyset\ \mathbf{a_\rho} + zsin\emptyset\ \mathbf{a_z}$$

around the edge *L* of the wedge defined by $0 \leq \rho \leq 2, 0 \leq \emptyset \leq 60°,\ z = 0$ as shown in figure.



Problem-2

- Given $u = xy + yz + xz$, find gradient ∇u at point (1,2,3) and the directional derivative of *u* at the same point in the direction toward point (3,4,4).

Problem-3

- Given that $\rho_s = x^2 + xy$, calculate $\int_s \rho_s dS$ over the region: $y \leq x^2, 0 < x < 1$.