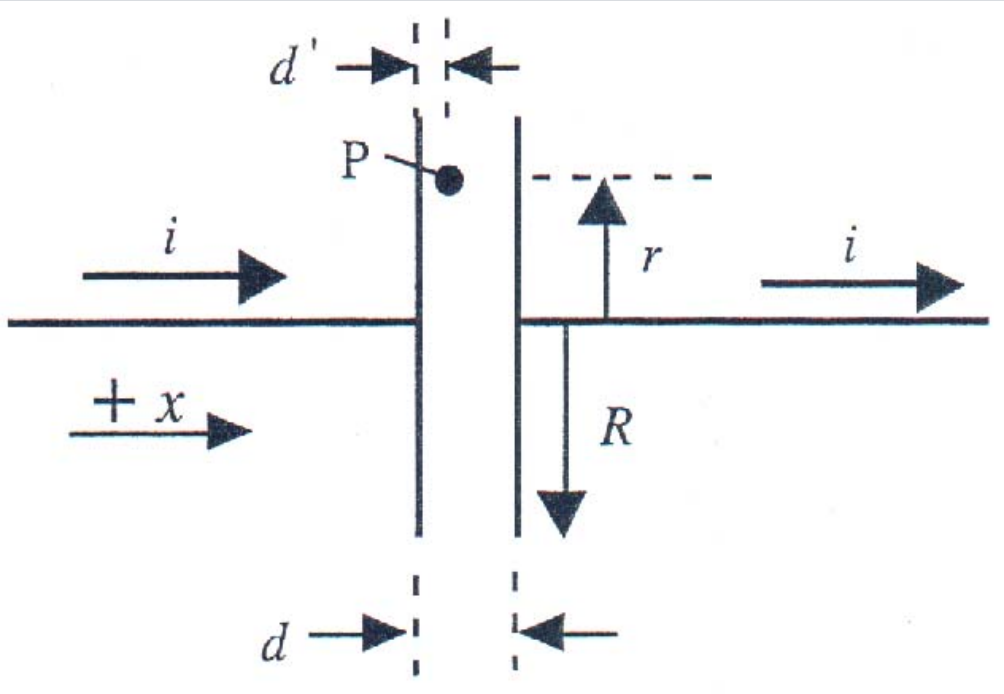
Group Problem: Capacitor



A circular capacitor of spacing *d* and radius *R* is in a circuit carrying the steady current *i* shown.

At time t=0 it is uncharged

1. Find the electric field **E**(t) at P vs. time t (mag. & dir.)
2. Find the magnetic field **B**(t) at P
3. Find the Poynting vector **S**(t) at P
4. What is the total power flux into/out of the capacitor?
5. Does this make sense? How? (Hint: What's U?)