12-1. Consider an ideal cavity resonator, in the form of a right circular cylinder with inner radius R and length d, and flat end faces.
For the TM(0,1,0) mode of oscillation, determine ...
(A) the surface charge density $\Sigma(\phi,z,t)$ on the surface S at $\rho = R$;
(B) the surface charge density $\Sigma(\rho,\phi,t)$ on the end caps at z = 0 and z = d;
(C) the surface current density $\vec{K}(\phi,z,t)$ on the surface S at $\rho = R$;
(D) the surface current density $\vec{K}(\rho,\phi,t)$ on the end caps at z = 0 and z = d.
For each part sketch a picture of the result (better, use computer graphics) if d = 3R.

12-2. Consider an ideal cavity resonator, in the form of a right circular cylinder with inner radius R and length d, and flat end faces.
For the TE(1,1,1) mode of oscillation, determine ...
(A) the surface charge density $\Sigma(\phi,z,t)$ on the surface S at $\rho = R$;
(B) the surface charge density $\Sigma(\rho,\phi,t)$ on the end caps at z = 0 and z = d;
(C) the surface current density $\vec{K}(\phi,z,t)$ on the surface S at $\rho = R$;
(D) the surface current density $\vec{K}(\rho,\phi,t)$ on the end caps at z = 0 and z = d.
For each part sketch a picture of the result (better, use computer graphics) if d = 3R.

12-3. Jackson Problem 8.4.

12-4. Jackson Problem 8.6.