

Homework 5

Due October 9, 2009

272:

1.- What is the capacitance C of a capacitor that consists of two concentric spherical shells, the inner of radius r_1 , and the outer of radius r_2 ? What would the limit be if $r_2 - r_1 \ll r_1$. What would happen if r_2 goes to infinity (assume the potential there is zero).

272H (the previous and the following one):

2.- Calculate the force which acts on one plate of a parallel-plate capacitor. The potential difference between the plates is 3,000 V and the plates are squares 20 cm on a side with a separation of 3 cm. If the plates are insulated so the charge cannot change, how much external work could be done by letting the plates come together? Does this equal the energy that was initially stored in the electric field?

