A hollow grounded conducting sphere of radius a contains a point charge Q at the radius b as shown in the figure.

a) Show that the field inside the sphere is the same as if there were no sphere and, instead, a charge Q' = -(a/b)Q at D = (a/b)a. You can prove this by showing that the V of Q plus Q' is uniform over the surface of the sphere.

b) Calculate the force of attraction.

c) Calculate the surface charge density on the inside surface of the conducting sphere.