PHYS 703 Homework Problem

1. When a soap bubble has just barely formed, i.e., *before* surface tension has had a chance to act, it is spherical with radius R_0 and the internal air pressure is the same as the external atmospheric pressure. The inward pressure due to surface tension is $4\Gamma/R$, where Γ is the surface tension and R is the bubble radius. What is the radius R of the bubble in equilibrium? A charge Q is now placed on the bubble and distributes itself uniformly across the surface. What is the new equilibrium radius R_Q? [Assume that the temperature T of everything involved remains the standard temperature throughout.]