Induced charge on a grounded conducting sphere

A point charge q is placed at a distance $\vec{y}$ from the center of a grounded conducting sphere of radius a. The induced surface charge density is

$$\sigma(\gamma) = -\frac{q}{4\pi a y} \frac{1 - \frac{a^2}{y^2}}{\left(1 + \frac{a^2}{y^2} - 2\frac{a}{y}\cos\gamma\right)^{\frac{3}{2}}},$$

where γ is the angle between the line going from the center of the sphere to the charge q and the line going from the center of the sphere to the point on the surface of the sphere where the surface charge density is σ.

Calculate the total charge on the surface of the sphere.