4.4 If the particle's are far away, we can approximate the charged particle's field as uniform, with magnitude $\frac{q}{4\pi\varepsilon_0 r^2}$

Choosing the charged particle to coicide w/ the origin, and the neutral atom to rest on the x-axis,

the atom has a dipole given by $\vec{p} = \frac{\alpha q}{4\pi\varepsilon_0 r^2}\hat{x}$

This creates an electric field:

$E(\vec{x}) = \frac{1}{4\pi\varepsilon_0}\frac{1}{x^3}\left[3(\vec{p}\cdot\hat{x})\hat{x} - \vec{p}\right]$. In the present situation,

this becomes $\frac{1}{4\pi\varepsilon_0}\frac{1}{r^3}\left[2\vec{p}\right] = \frac{2\alpha q}{(4\pi\varepsilon_0)^2 r^5}\hat{x}$

So the Force of attraction on the point charge is

$$F = qE_{dip} = \frac{2\alpha q^2}{(4\pi\varepsilon_0)^2 r^5}\hat{x}$$

by Newton's 3rd law, the force on the dipole must be

$$F_{dip} = -F = -\frac{2\alpha q^2}{(4\pi\varepsilon_0)^2 r^5}\hat{x}$$