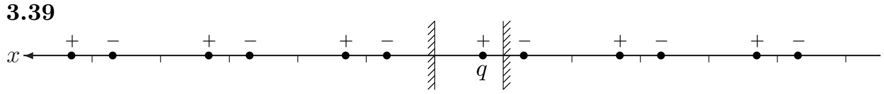
to solve the problem, one puts down image charges of q, then one needs to put down image charges of the image charges!
the resulting pattern is periodic with a period 2a as in the diagram below

tick marks on line represent spacings of distance a

Problem 3.39



The image configuration is shown in the figure; the positive image charge forces cancel in pairs. The net force of the negative image charges is:

these terms are from (-) charges to the right of q
they pull q to the right, so terms are positive

$$F = \frac{1}{4\pi\epsilon_0}q^2\left\{\frac{1}{[2(a-x)]^2} + \frac{1}{[2a+2(a-x)]^2} + \frac{1}{[4a+2(a-x)]^2} + \dots\right.$$

these terms are from (-) charges to the left of q
they pull q to the left, so terms are negative

$$\left. - \frac{1}{(2x)^2} - \frac{1}{(2a+2x)^2} - \frac{1}{(4a+2x)^2} - \dots\right\}$$

$$= \boxed{\frac{1}{4\pi\epsilon_0}\frac{q^2}{4}\left\{\left[\frac{1}{(a-x)^2} + \frac{1}{(2a-x)^2} + \frac{1}{(3a-x)^2} + \dots\right] - \left[\frac{1}{x^2} + \frac{1}{(a+x)^2} + \frac{1}{(2a+x)^2} + \dots\right]\right\}}.$$

When $a \to \infty$ (i.e. $a \gg x$) only the $\frac{1}{x^2}$ term survives: $F = -\frac{1}{4\pi\epsilon_0}\frac{q^2}{(2x)^2}$ ✓ (same as for only *one* plane—Eq. 3.12). When $x = a/2$,

$$F = \frac{1}{4\pi\epsilon_0}\frac{q^2}{4}\left\{\left[\frac{1}{(a/2)^2} + \frac{1}{(3a/2)^2} + \frac{1}{(5a/2)^2} + \dots\right] - \left[\frac{1}{(a/2)^2} + \frac{1}{(3a/2)^2} + \frac{1}{(5a/2)^2} + \dots\right]\right\} = 0. \checkmark$$

don't try to do the sum for the case of general x. Just consider the special cases a -> infinity, and x=a/2