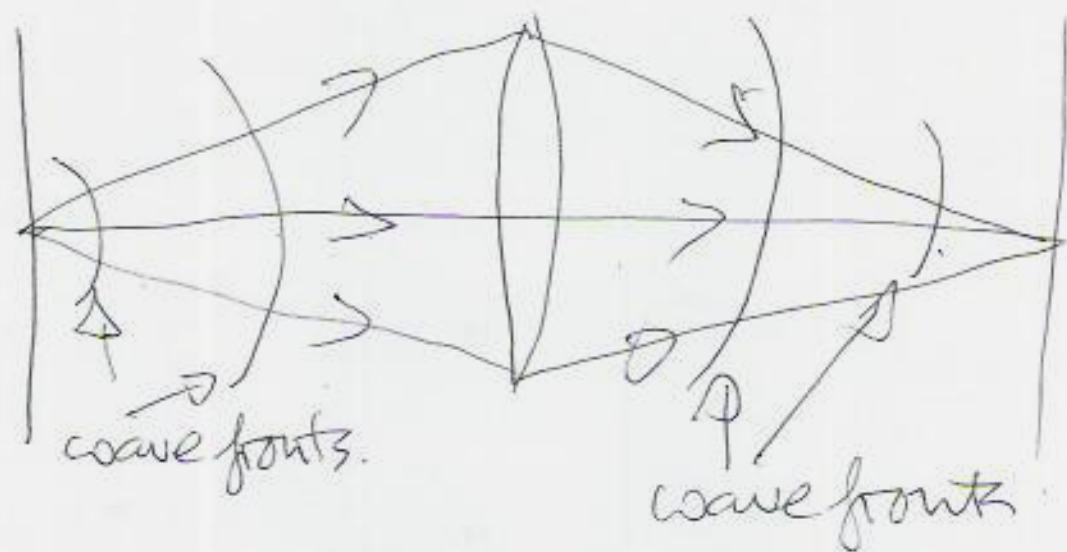


8)



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a) charge is $\propto \left(\frac{9 \times 10^{12}}{6 \times 10^{12}} \right) = 1.5$

New force = $1.5 \times 4 \times 10^{-9} = 6 \times 10^{-9} \text{ N}$

(i) $F \propto \frac{1}{r^2}$

$\left(\frac{9}{12} \right)^2 = 0.5625$

New force = $4 \times 10^{-9} \times 0.5625 = 2.25 \times 10^{-9} \text{ N}$

iii) $F = k \frac{Q_1 Q_2}{r^2}$ $E = \frac{F}{Q_2}$

E due to Q_2 at position of Q_1

or $F/Q_2 = \frac{k Q_1 Q_2}{r^2 Q_2} = \frac{k Q_1}{r^2} = E$