For our atomic model of permittivity we found ε to be

$$\tilde{\varepsilon} = \varepsilon_0 \left(1 + \frac{Nq^2}{\varepsilon_0 m} \sum_i \frac{f_i}{(\omega_i^2 - \omega^2) - i\gamma_i \omega} \right)$$

We also know $\frac{n}{c} = \frac{\tilde{k}}{\omega} = \sqrt{\tilde{\varepsilon}\mu}$

i) Find (and simplify) a formula for n, assuming the term adding to "1" above is *small.*

ii) In that limit, find k_R and k_{Im}.
What does each one tell you, physically?

iii) Sketch both of these as functions of ω (assuming that only one term in that sum "dominates")

(Under what condition on ω *should* one term in that sum dominate?)