Dispersion

1. Show that

$$n = \left(\frac{1}{2}[\sqrt{\epsilon_1^2 + \epsilon_2^2} + \epsilon_1]\right)^{1/2}$$

$$k = \left(\frac{1}{2}[\sqrt{\epsilon_1^2 + \epsilon_2^2} - \epsilon_1]\right)^{1/2}$$

where $\tilde{N} = n + ik$ is the complex index of refraction and $\tilde{\epsilon} = \epsilon_1 + i\epsilon_2$ is the complex dielectric function.