7.4.

(a). $\nabla \times \vec{H} = \vec{J} + \frac{\partial \vec{D}}{\partial t} = \sigma \vec{E} + \varepsilon \frac{\partial \vec{E}}{\partial t} = \sigma \vec{E} - i\omega\varepsilon \vec{E} = -i\omega\left(i\frac{\sigma}{\omega} + \varepsilon\right)\vec{E}$.

$n = \sqrt{\frac{\varepsilon_1}{\varepsilon_0}} = \sqrt{\frac{i\frac{\sigma}{\omega} + \varepsilon}{\varepsilon_0}}$.

$Ae^{i\varphi} = \frac{E_r}{E_i} = \frac{1-n}{1+n} = \frac{\sqrt{\varepsilon_0} - \sqrt{i\frac{\sigma}{\omega} + \varepsilon_0}}{\sqrt{\varepsilon_0} + \sqrt{i\frac{\sigma}{\omega} + \varepsilon}}$

(b). $\frac{\sqrt{\varepsilon_0} - \sqrt{i\frac{\sigma}{\omega} + \varepsilon_0}}{\sqrt{\varepsilon_0} + \sqrt{i\frac{\sigma}{\omega} + \varepsilon}} \approx \frac{1 - \frac{1+i}{\sqrt{2}}\sqrt{\frac{\sigma}{\omega\varepsilon_0}}}{1 + \frac{1+i}{\sqrt{2}}\sqrt{\frac{\sigma}{\omega\varepsilon_0}}} = \frac{-(1+i) + \sqrt{\frac{2\omega\varepsilon_0}{\sigma}}}{1+1+\sqrt{\frac{2\omega\varepsilon_0}{\sigma}}}$.

$R = |A|^2 = \frac{(\sqrt{\frac{2\omega\varepsilon_0}{\sigma}} - 1)^2 + 1}{(\sqrt{\frac{2\omega\varepsilon_0}{\sigma}} + 1)^2 + 1} = \frac{\frac{2\omega\varepsilon_0}{\sigma} + 2 - 2\sqrt{\frac{2\omega\varepsilon_0}{\sigma}}}{\frac{2\omega\varepsilon_0}{\sigma} + 2\sqrt{\frac{2\omega\varepsilon_0}{\sigma}} + 2} \approx 1 - 2\sqrt{\frac{2\omega\varepsilon_0}{\sigma}}$.

$= 1 - 2\frac{\omega}{c}\delta$. $\delta = \sqrt{\frac{2c^2\varepsilon_0}{\omega\sigma}} = \sqrt{\frac{2}{\mu_0\omega\sigma}}$.