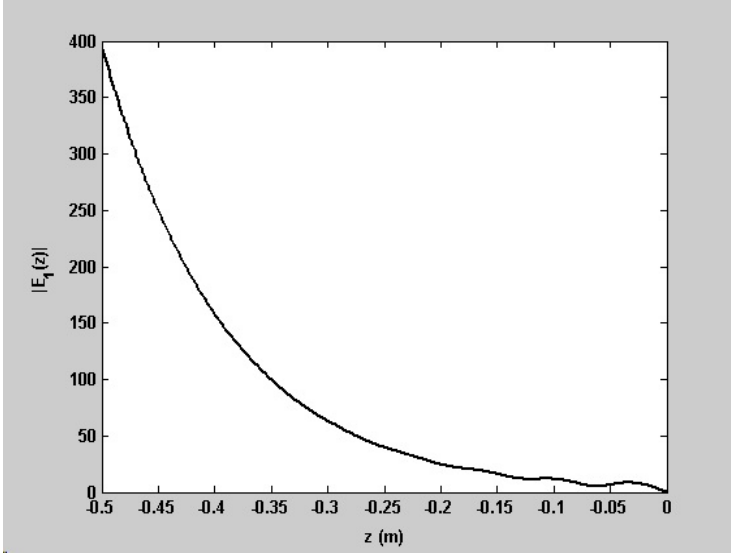
1.4 (a.) $|\boldsymbol{H}| = 0.127$ A/m, $-\boldsymbol{a}_x$ direction
(b.) $v_p = 1.88\times10^8$ m/s, $\lambda = 7.83$ cm
(c.) $\Delta\phi = 119^o$

1.7 $\Gamma = (\eta^2 - \eta_o^2)/(\eta^2 + \eta_o^2)$

1.9 $|\boldsymbol{E}_1| = 4|e^{-9.19z}e^{-j47.73z} - e^{9.19z}e^{j47.73z}|$




1.10 (a.) Air-Cu interface transmission loss ($20\log_{10}T_1$) = -87.18 dB
Cu-Air interface transmission loss ($20\log_{10}T_2$) = +6.02 dB
(b.) $t = 0.0166$ mm

1.11 There are no multiple reflections in this problem. Assume the medium characterized by $\epsilon_r = 3.0$, $\tan\delta = 0.1$, $\mu_r = 1$ extends from $z = -\infty$ to $z = 0.2$ m.
(a.) $P_i\,(z = 0) = 46.000$ W/m$^2$
$P_r\,(z = 0) = 0.595$ W/m$^2$
(b.) $P_{in}\,(z = 0) = 45.606$ W/m$^2$ $\neq P_i\,(z = 0) - P_{in}\,(z = 0)$