Answer to Problem 2, HW6

$\varepsilon_r = 4 \Rightarrow v_p = c/2$

$2T = 7 \mu s$

$l = v_p T = 525 \text{ m}$

$Z_L = 0 \Rightarrow \Gamma_L = -1$

$v(0, 2T) = V_1^+ - V_1^+ - \Gamma_g V_1^+ = 3 \text{ V}$

$- \Gamma_g V_1^+ = 3 \text{ V}$

$V_1^+ = 12 \text{ V}$

$\therefore \Gamma_g = -1/4$

$R_g / Z_0 = (1+\Gamma_g) / (1-\Gamma_g) = 3/5$

$R_g = 50 \Omega \times 3/5 = 30 \Omega$

$V_g = V_1^+ (R_g + Z_0) / Z_0 = 12 \text{ V} \times 8/5 = 19.2 \text{ V}$