HW#11

**#1** $Z_L = \infty$ $\Gamma = \frac{Z_L - Z_0}{Z_L + Z_0} = 1$

$V_{TOTAL} = V^+ + V^-$ $V^- = \Gamma V^+$

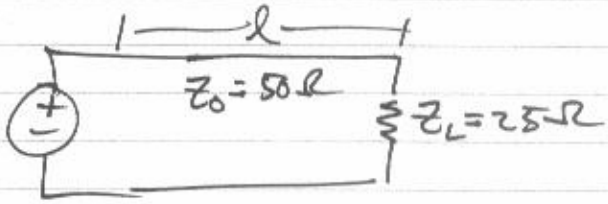
$= V^+ + \Gamma V^+$

$\boxed{= 2V^+}$

**#2** $\Gamma = \frac{Z_L - Z_0}{Z_L + Z_0} = \frac{-5}{95} = \boxed{-0.053} \Rightarrow V_0^- = \Gamma V_0^+$

**#3** $P = \frac{V^2}{Z_0} = \frac{1^2}{50} = \boxed{0.02W}$

**#4**

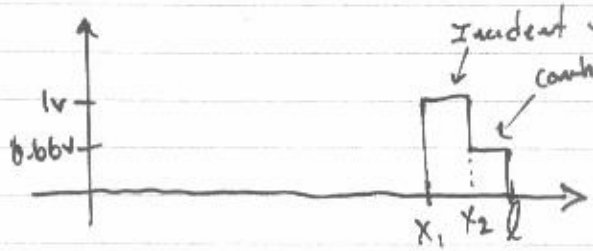



$\Gamma = -\frac{1}{3}$

$c = 3e8$ $l = 3m$ $\tau = 1ns$ $pw = 3e8 \cdot 1e^{-9} = .3m$

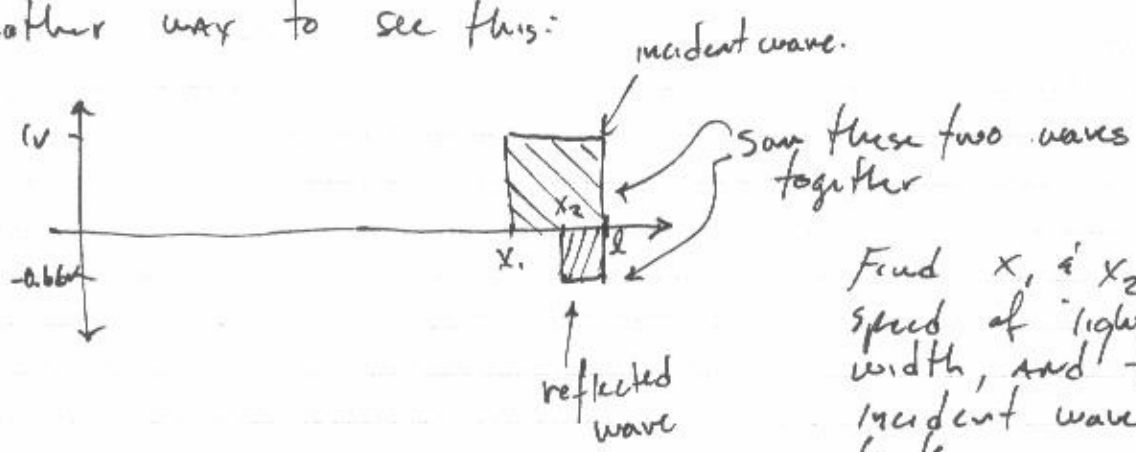
a)


b)




$X_1 = 2.76m$ $X_2 = 2.94m$

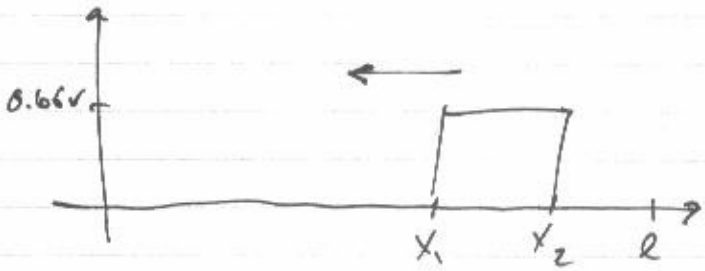
b) another way to see this:




Find $x_1$ & $x_2$ from speed of light, pulse width, and time after incident wave reaches load:

$0.2e^{-9} \cdot 3e^{8} = 0.06m$

c)




$x_1 = 2.1m$

$x_2 = 2.4m.$

Find $x_1$ & $x_2$ from speed of light (c) & time after wave reaches load at $l$ (which is 3ns)

$3ns \cdot 3e^{8} m/s = 0.9m$