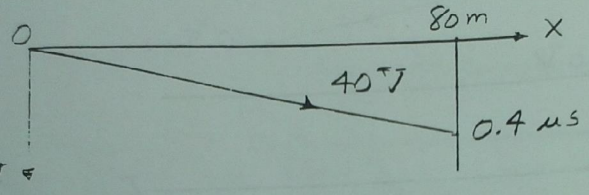
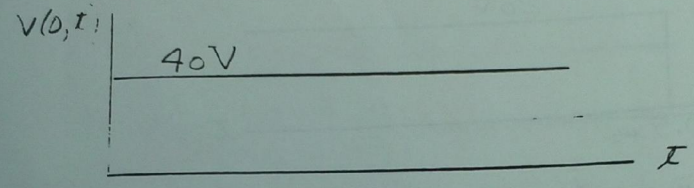
Chapter 2

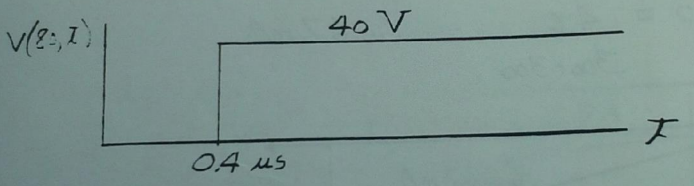
2-1 Refer to Fig. P2-1.

$\Gamma_1 = 0,\ \Gamma_2 = 0,\ \lambda_1 = 80\text{ m}/200\text{ m/}\mu\text{s} = 0.4\ \mu\text{s}$

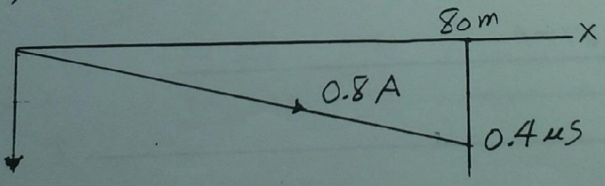
(a) $V(0,0) = \dfrac{50}{50+50} \times 80 = 40\text{ V}$

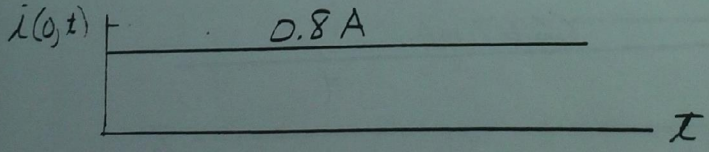


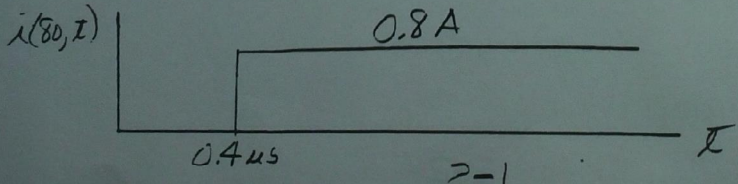




(b) $i(0,0) = 80/(50+50) = 0.8\text{ A}$



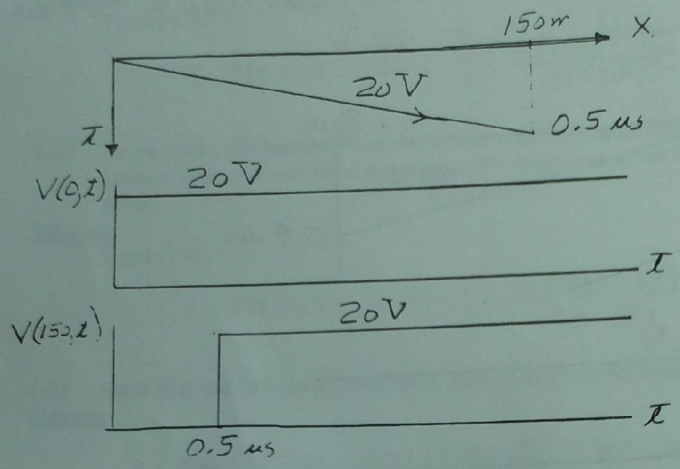




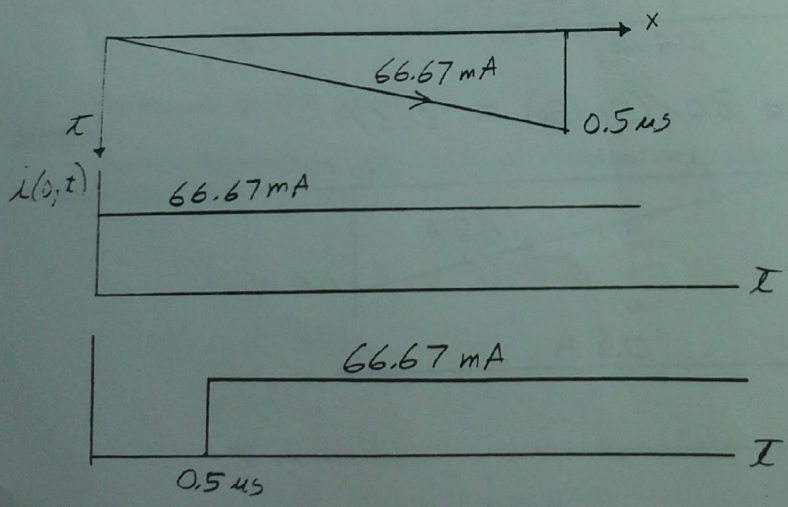
2-2 Refer to Fig P2-2. $T_1 = \frac{150\text{ m}}{300\text{ m/}\mu\text{s}} = 0.5\ \mu\text{s}$

$\Gamma_1 = 0,\ \Gamma_2 = 0$

(a) $V(0,0) = \frac{300}{300+300} \times 40 = 20\text{ V}$



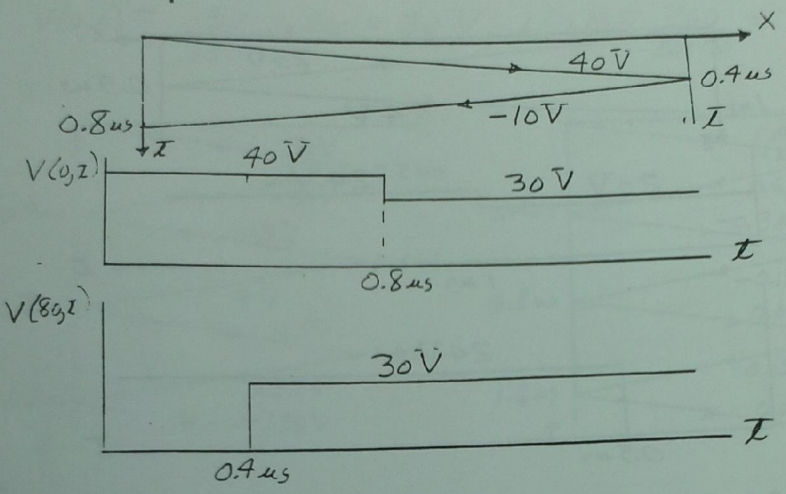
(b) $i(0,0) = \frac{40}{300+300} = 66.67\text{ mA}$



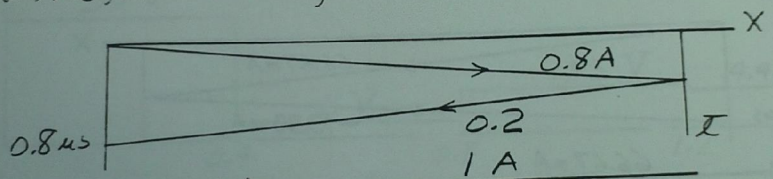
2-3 Refer to Fig P2-3. $\tau_1 = 0.4\ \mu s$

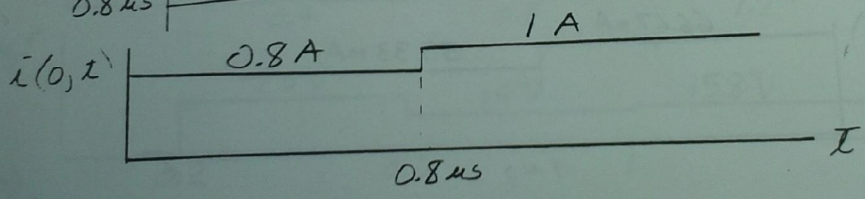
$\Gamma_1 = 0$, $\Gamma_2 = (30-50)/(30+50) = -0.25$

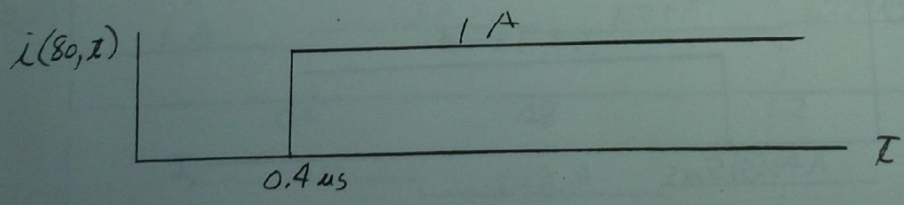
(a) $V(0,0) = 40\ V$



(b) $i(0,0) = 0.8\ A$, $-\Gamma_2 = 0.25$



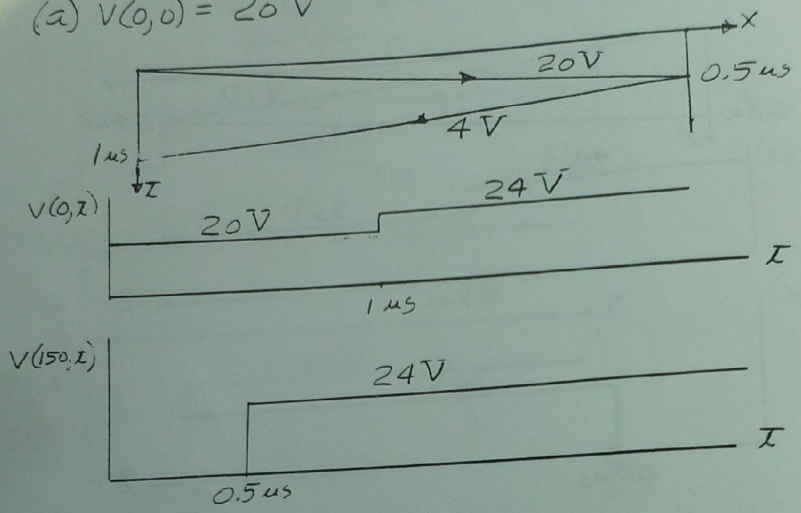




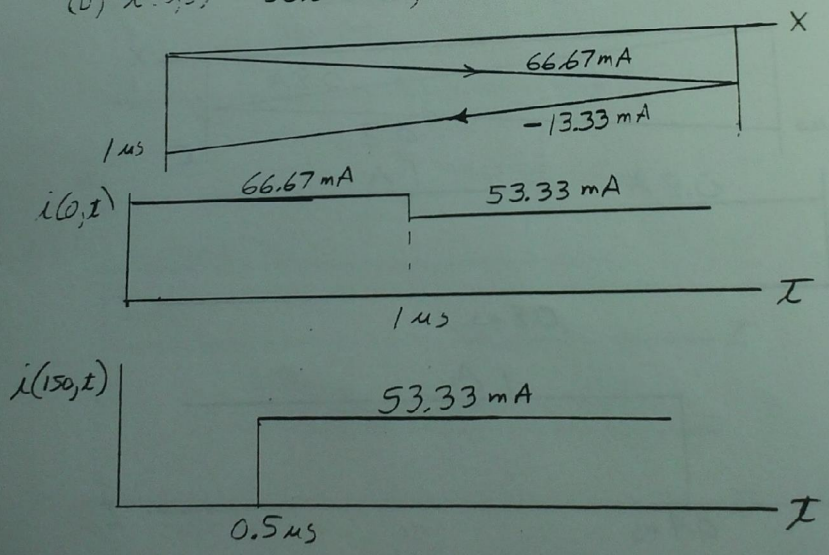
2-4 Refer to Fig. P2-4. $\ell = 0.5\,\mu s$

$\Gamma_1 = 0$, $\Gamma_2 = (45-300)/(45+300) = 0.2$

(a) $V(0,0) = 20\,V$



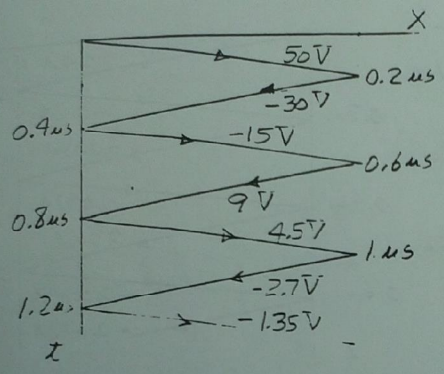
(b) $i(0,0) = 66.67\,mA$, $-\Gamma_2 = -0.2$

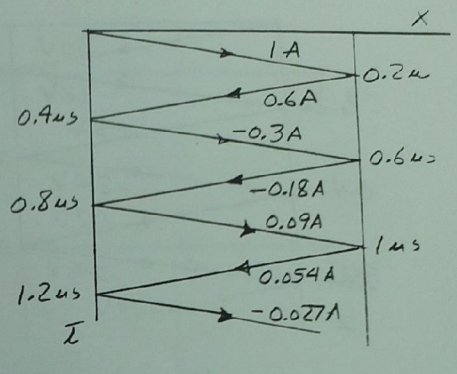


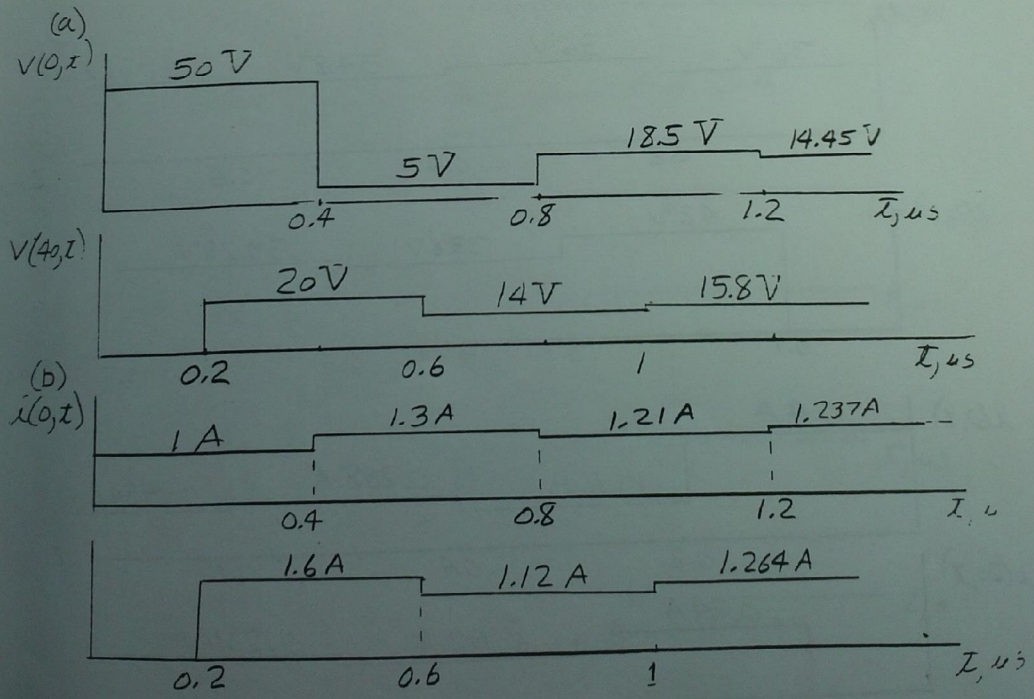
2-5 Refer to Fig. P2-5. $\tau_1 = 40/200 = 0.2\ \mu s$

$\Gamma_1 = \frac{150-50}{150+50} = 0.5$, $\Gamma_2 = \frac{12.5-50}{12.5+50} = -0.6$; $-\Gamma_1 = -0.5$, $-\Gamma_2 = 0.6$

$V(0,0) = \frac{50}{50+150} \times 200 = 50\ V$, $i(0,0) = \frac{200}{50+150} = 1\ A$



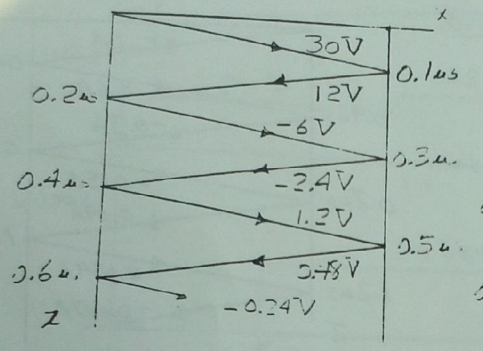


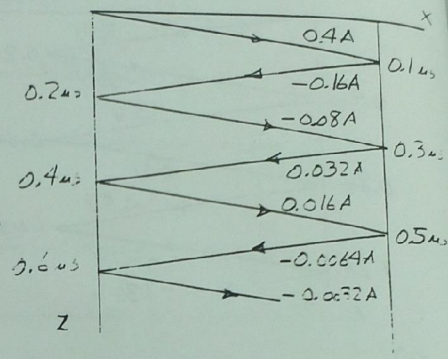


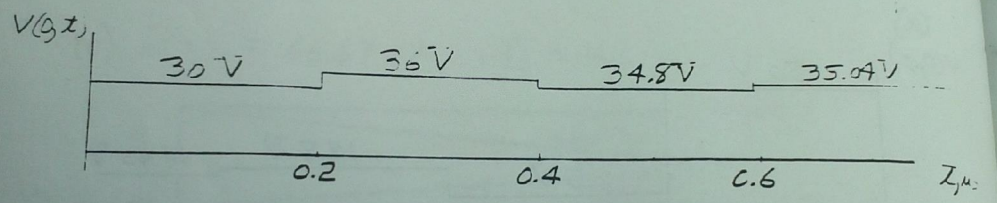
2-6 Refer to Fig. P2-6. $t_1 = 20/200 = 0.1\,\mu s$

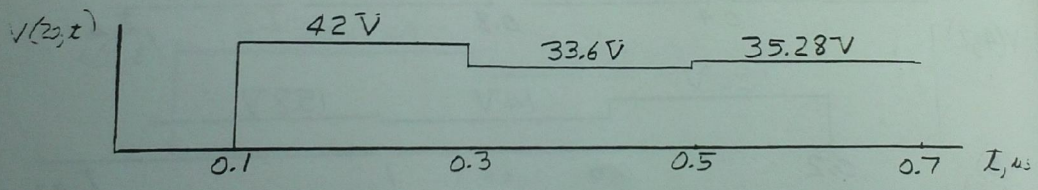
$\Gamma_1 = \frac{25-75}{25+75} = -0.5$, $\Gamma_2 = \frac{175-75}{175+75} = 0.4$; $-\Gamma_1 = 0.5$, $-\Gamma_2 = -0.4$

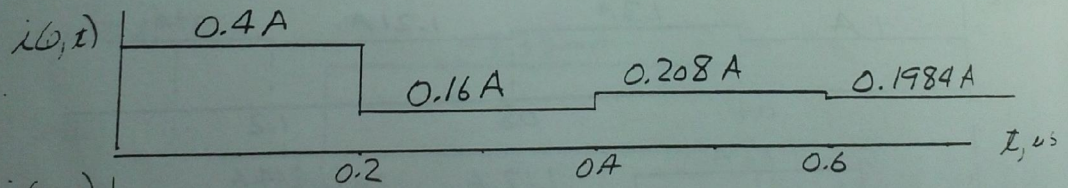
$V(0,0) = \frac{75}{75+25} \times 40 = 30\,V$, $i(0,0) = \frac{40}{75+25} = 0.4\,A$

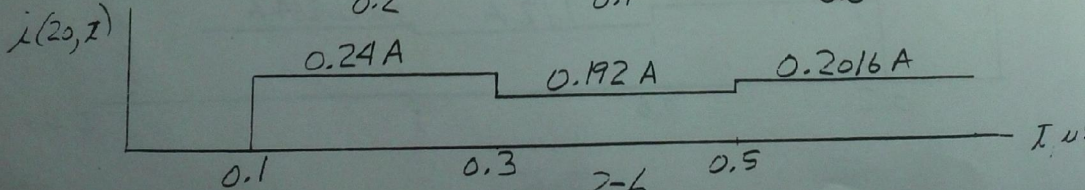






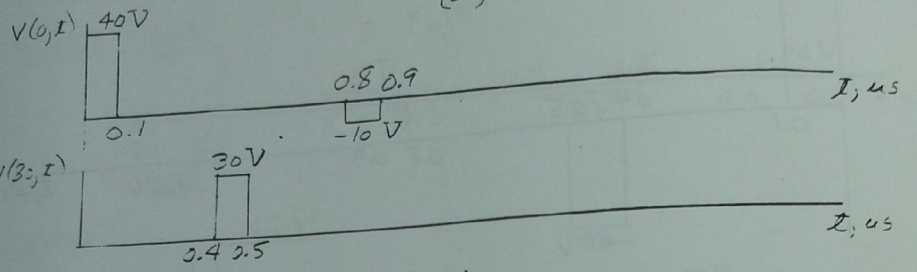




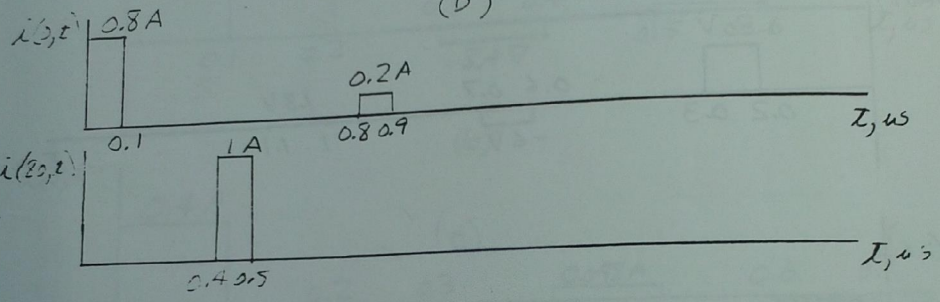


2-7 Refer to the bounce diagram in Prob. 2-3.

(a)

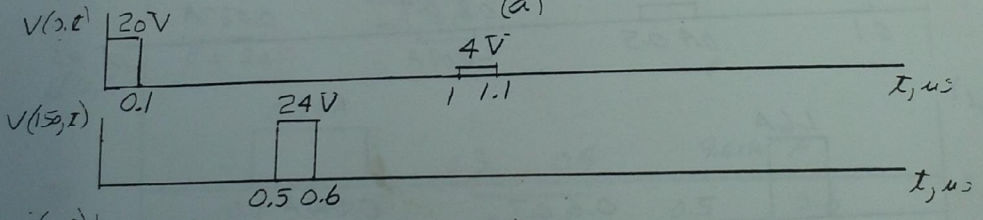


(b)

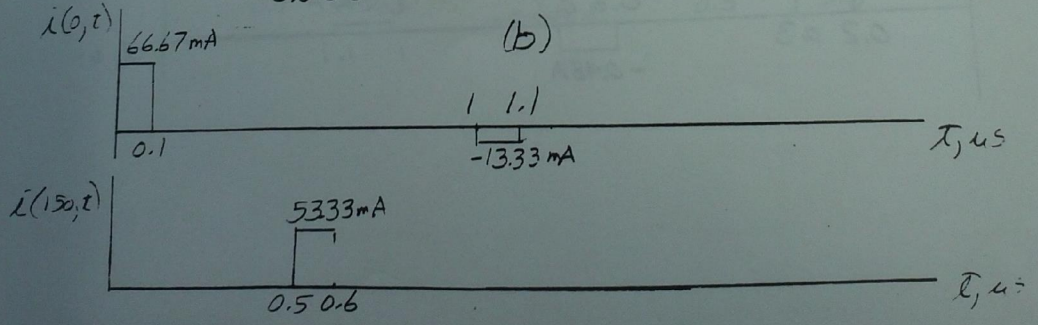


2-8 Refer to the bounce diagram in Prob. 2-4.

(a)

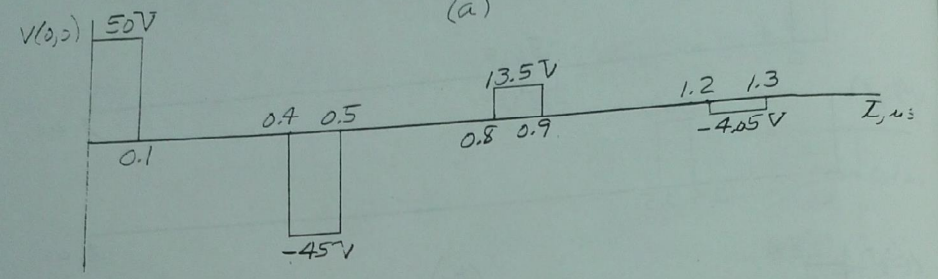


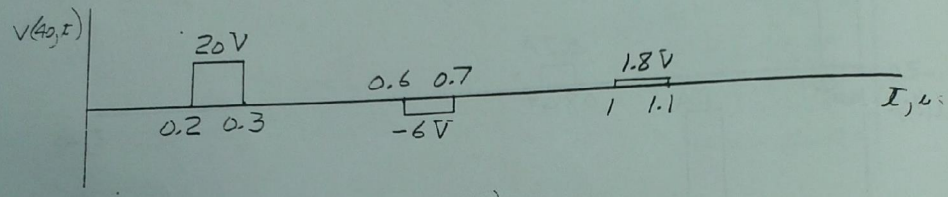
(b)



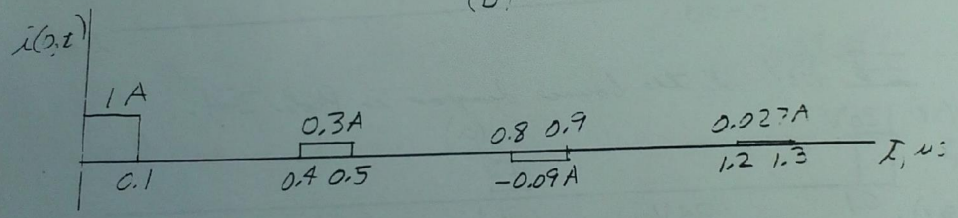
2-9 Refer to the bounce diagram in Prob. 2-5

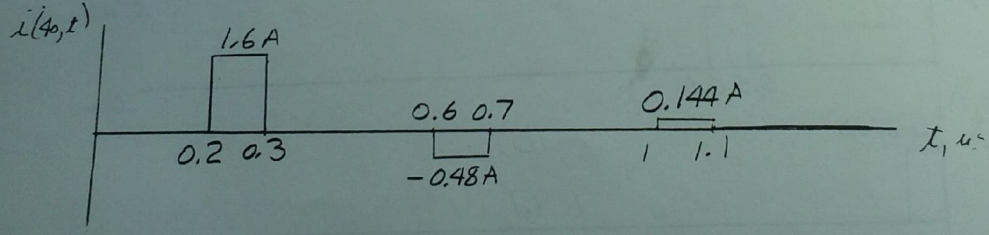
(a)





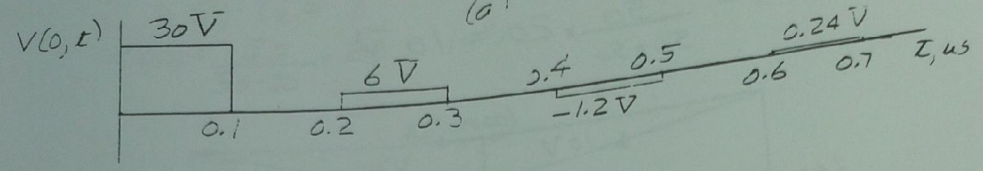
(b)

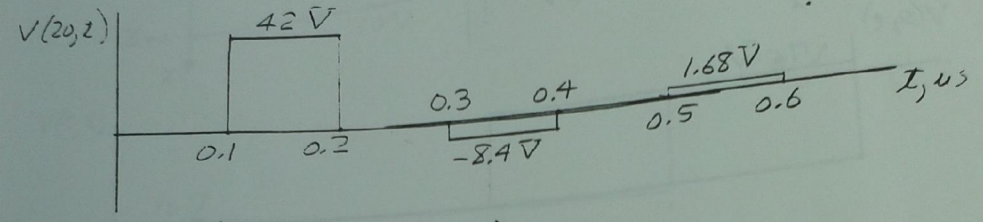




2-10 Refer to the figure diagram in Prob. 2-6.

(a)





(b)