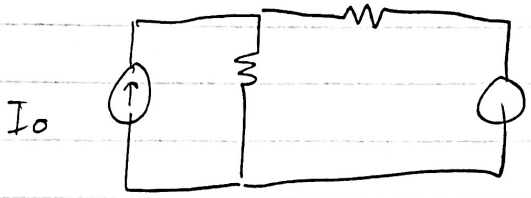
HW 4

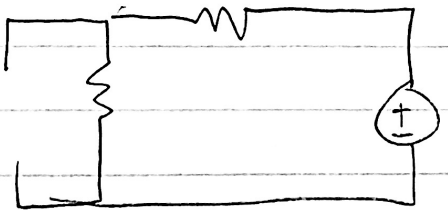
2.08

a)



total current : $I = 6A$

$$I = 6 \cdot \frac{5}{5+16} = \frac{30}{15} = 2A$$



$$I_2 = \frac{45}{10+5} = 3$$

$$I_2 = -I_2 = -3$$

Total = $I = I_1 + I_2 = \boxed{-1A}$

b)

7.1

a) $u[n] = u[n] - \delta[n-3] - u[n-4]$

$u[n] = [1, 1, 1, 1, 1, \ldots]$

$\delta[n] = [\underset{0}{0}, 0, 0, 1, 0, 0, 0 \ldots]$

$u[n-4] = [\underset{0}{0}, 0, 0, 0, \underset{4}{1}, 1, 1, \ldots]$ (0 1 2 3 4 5 6)

$[0] \quad = 1 - 0 - 0 = 1$

$[1] \quad 1 - 0 - 0 = 1$

$[2] \quad 1 - 0 - 0 = 1$

$[3] \quad 1 - 1 - 0 = 0$

$[4] \quad 1 - 0 - 1 = 0$

$[5] \quad 1 - 0 - 1 = 0$

$[n] \quad [1, 1, 1]$

d) $2\delta[n] = 2\delta[n-1] - 4\delta[n-3]$

$\delta[n-3] = \begin{cases} 1 & n=3 \\ 0 & \text{otherwise} \end{cases}$

So $2\delta[n] = [\underset{0}{0}, 2, 0, -4]$

7.2

d) $nu[n] - 2[n-1]u[n-1] + 2[n-3]u[n-3] - (n-4)u[n-4]$

$x[n] = \{\underline{0}, 1, 0, -1, 0, 0, 0, 0 \ldots\}$