6-6 (a) $u_O = -\frac{R_f}{R_1}u_{I1} - \frac{R_f}{R_2}u_{I2} + u_{I3}\cdot\left(1+\frac{R_f}{R_1 /\!/ R_2}\right) = -2u_{I1} - 2u_{I2} + 5u_{I3}$

(b) $u_O = -\frac{R_f}{R_1}u_{I1} + u_{I2}\cdot\frac{R_3}{R_2+R_3}\cdot\left(1+\frac{R_f}{R_1}\right) + u_{I3}\cdot\frac{R_2}{R_2+R_3}\cdot\left(1+\frac{R_f}{R_1}\right)$

$= -10u_{I1} + 10u_{I2} + u_{I3}$

(c) $u_O = -u_{I1}\cdot\frac{R_f}{R_1} + u_{I2}\cdot\frac{R_f}{R_1+R_f}\cdot\left(1+\frac{R_f}{R_1}\right) = -8u_{I1} + 8u_{I2}$

(d) $u_O = -\frac{R_f}{R_1}u_{I1} - \frac{R_f}{R_2}u_{I2} + u_{I3}\cdot\frac{R_6}{R_3+R_4}\cdot\left(1+\frac{R_f}{R_1 /\!/ R_2}\right) + u_{I4}\cdot\frac{R_3}{R_3+R_4}\left(1+\frac{R_f}{R_1 /\!/ R_2}\right)$

$= -20u_{I1} - 20u_{I2} + 40u_{I3} + u_{I4}$

6-10. (a) T型网络反相比例求和

$u_M = -R_3\left(\frac{u_{I1}}{R_1} + \frac{u_{I2}}{R_2}\right)$, $i_3 = -\frac{u_M}{R_5}$, $i_4 = \frac{u_{I1}}{R_1} + \frac{u_{I2}}{R_2} - \frac{u_M}{R_5}$

$u_O = u_M - i_4 R_4 = -R_3\left(\frac{u_{I1}}{R_1} + \frac{u_{I2}}{R_2}\right) - \left(\frac{u_{I1}}{R_1} + \frac{u_{I2}}{R_2} - \frac{u_M}{R_5}\right)\cdot R_4$

$= \left(\frac{u_{I1}}{R_1} + \frac{u_{I1}}{R_2}\right)\left(-R_3 - R_4 - \frac{R_3 R_4}{R_5}\right)$

(b) $u_{34} = u_{I+}\cdot\left(1+\frac{R_3}{R_1}\right)$

$u_{O1} = -u_{34}\cdot\frac{R_5}{R_4}$, $u_{O2} = u_{I-}\cdot\left(1+\frac{R_5}{R_4}\right)$

$\therefore u_O = u_{O1} + u_{O2} = -u_{34}\cdot\frac{R_5}{R_4} + u_{I-}\left(1+\frac{R_5}{R_4}\right)$

$= -u_{I+}\left(1+\frac{R_3}{R_1}\right)\cdot\frac{R_5}{R_4} + u_{I-}\left(1+\frac{R_5}{R_4}\right)$

$= \left(1+\frac{R_5}{R_4}\right)\left(u_{I-} - u_{I+}\right) = -u_I\cdot\left(1+\frac{R_5}{R_4}\right)$

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$\frac{1}{10}+3$

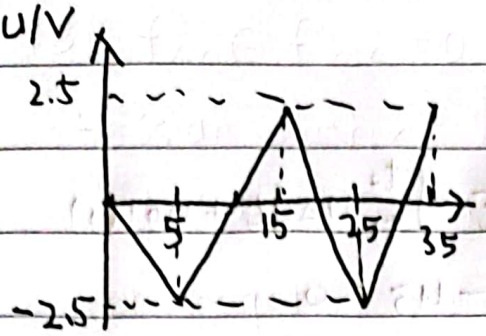
(c) $\frac{u_{I1}-u_P}{R_1} + \frac{u_{I2}-u_P}{R_1} + \frac{u_{I3}-u_P}{R_1} = \frac{u_P}{R_2}$

$\therefore u_P = (u_{I1}+u_{I2}+u_{I3})\cdot\frac{1}{\left(\frac{R_1}{R_2}+3\right)}$

$u_O = \left(1+\frac{R_4}{R_2}\right)\cdot u_P$

$u_O = \frac{31}{10}\cdot(u_{I1}+u_{I2}+u_{I3})\cdot\frac{10}{31} = 10(u_{I1}+u_{I2}+u_{I3})$

6.11、$u_0 = -\frac{1}{RC}\cdot\int_{t_1}^{t_2} u_1 dt + u_0(t_1) = -100\int_{t_1}^{t_2} u_1 dt$



6-13. (a) $\because u_0 = -\frac{R_2}{R_1}u_1 - \frac{1}{C}\int i_C dt = -\frac{R_2}{R_1}u_1 - \frac{1}{R_1 C}\int u_1 dt$

$= -u_1 - 1000\int u_1 dt$

(b) $i = C\frac{du_1}{dt}$, $u_0 = -R\cdot C_1\frac{du_1}{dt} - \frac{1}{C_2}\cdot\int C_1\frac{du_1}{dt}\cdot dt$

$= -RC_1\frac{du_1}{dt} - \frac{C_1}{C_2}\cdot u_1$

$= -0.001\cdot\frac{du_1}{dt} - 2u_1$

(c) $u_0 = \frac{1}{C}\int i_C dt = \frac{1}{RC}\int u_1 dt = 1000\int u_1 dt$

(d) $u_0 = -\frac{1}{C}\cdot\int i_C dt = -\frac{1}{C}\int\left(\frac{u_{11}}{R_1} + \frac{u_{12}}{R_2}\right)dt = -100\int(u_{11} + 0.5u_{12})dt$

6-14. (1) $u_{01} = -R_f\cdot\frac{u_1}{R_1} + R_f\cdot\frac{u_0}{R_2} = u_0 - u_1$

$i_C = \frac{u_{01} - u_0}{R} = \frac{u_1}{R}$

$u_0 = \frac{1}{C}\int i_C dt = -\frac{1}{RC}\int u_1 dt = -10\int u_1 dt$

(2) 0.6s

6-15. $u_2 = u_0\cdot\left(1 + \frac{R_2}{R_3}\right) = 2u_0$

$2u_0 = -\frac{1}{C}\int i_C dt = -\frac{1}{RC}\int u_1 dt = -2\int u_1 dt$

$\therefore u_0 = -\int u_1 dt$

6.16.(1) $U_B = 4V$ · $U_C = 1V$

$\therefore U_A = 7V$, $U_D = -2V$

$u_0 = u_D \cdot (1 + \frac{R}{R}) = -4V$

(2) A3的输出电压 $u_3 = -\frac{1}{R_1 C} \cdot \int_{t_1}^{t_2} u_A dt + u_0(t_1)$

又从 $u_0 = 2u_D - \frac{R}{R}u_3 = 2u_D - u_3 = 0$

$\therefore u_3 = 2u_D = -4V$

$\therefore 7 \times (-20 \cdot \quad t) = -4 \quad t = 0.02865$

6—18. (a) $u_0' = 0.1 u_{13} \cdot u_0$

$u_0' = \left(\frac{u_{11}}{R_1} + \frac{u_{12}}{R_2}\right) \cdot (-R_3)$

$\therefore 0.1 u_{13} u_0 = -R_3\left(\frac{u_{11}}{R_1} + \frac{u_{12}}{R_2}\right)$

$\therefore u_0 = -\frac{10R_3}{u_{13}}\left(\frac{u_{11}}{R_1} + \frac{u_{12}}{R_2}\right)$

(b) $u_0 = -R_4 \cdot \left(\frac{ku_{12}}{R_2} + \frac{k^2 u_3}{R_3} + \frac{u_1}{R_1}\right)$