$$R_1 = R_2 = 5\,\Omega$$

$C_1 = 0.01\,F$

$C_2 = 0.03\,F$

$$L = 1\,H$$

$$v_{in}(t) = 10 + 20\cos 5t + 30\cos 10t$$

$$v'_{out}(t) = 10 \times \frac{5}{5+5} = 5\ V$$

$\omega = 5$

$$j5//(-j20) + (-j20/3) = 0$$

$$v''_{out}(t) = 0$$

$\omega = 10$

$$j10//(-j10) + (-j10/3) = \infty$$

$$v'''_{out}(t) = v_{in}(t)\frac{5}{5+5} = 15\cos 10t\ V$$

$$v_{out}(t) = v'_{out}(t) + v'''_{out}(t) = 5 + 15\cos 10t \ V$$

$$R_1 = R_2 = R_3 = 1k\Omega$$

$L = 1\ mH$

$t < 0$

$t = 0$

t

$v_L(t)$

$v_2(t)$

$v_3(t)$

0^{-}

R_i

$i = 1, 2, 3$

$$\tau = L/R$$

L

$$R = R_3 = 1$$

$$\tau = L/R = 10^{-6}$$

$$i_L(t) = i_L(\infty) + [i_L(0) - i_L(\infty)]e^{-t/\tau} = 6 + (4-6)e^{-t/0.001} = 6 - 2e^{-1000t} \quad (mA)$$

$$v_L(t) = L\frac{d}{dt}i_(t) = -2L\frac{d}{dt}e^{-t/\tau} = 2e^{-t/\tau} \quad V$$

$R_1 = 10\Omega$

$$R_2 = 2\Omega$$

$R_3 = 8\Omega$

$$L = 2H$$

$$V = 20V$$

$$I = 1.25A$$

$v(t)$

R_3

$v'(t)$

$v''(t)$

I

$i_L(0^-)$

$v'(0^+)$

τ

$v''(\infty)$

$$v(t) = v'(t) + v''(t)$$

$$i_L(0^-) = 20V/10\Omega = 2A$$

$$i_L(0^+) = i_L(0^-) = 2A$$

$$v'(0^+) = i_L(0^+)R_3 = 2 \times 8 = 16V$$

$$\tau = L/R = 2H/(2 + 10 + 8)\Omega = 0.1$$

$$i_L(t) = 2e^{-t/\tau}A$$

$v(0^+)$

$$v'(t) = v'(0^+)e^{-t/tau} = 16e^{-10t}$$

$$v''(0^+) = -1.25 \times 8 = -10V$$

$$v''(\infty) = -1.25 \times \frac{8+12}{8\times 12} = -6V$$

$$v''(t) = v''(\infty) + [v''(0^+) - v''(\infty)]e^{-t/\tau} = -6 + (-10 + 6)e^{-10t} = -6 - 4e^{-10t}$$

$$v(t) = v'(t) + v''(t) = 16e^{-10t} + (-6 - 4e^{-10t}) = 12e^{-10t} - 6$$