Solution of ECE 300 Test 8 F10
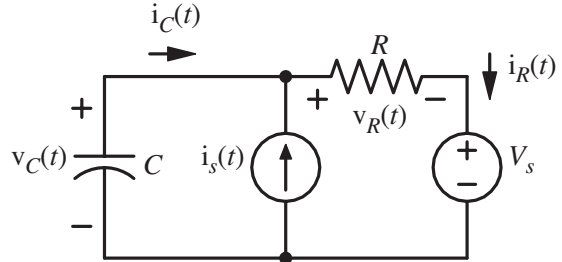
1. Fill in the blanks with numbers.

$$i_s(t) = 3u(t) \ , \ V_s = 12 \text{ V} \ , \ R = 22\Omega \ , \ C = 50\mu\text{F}$$

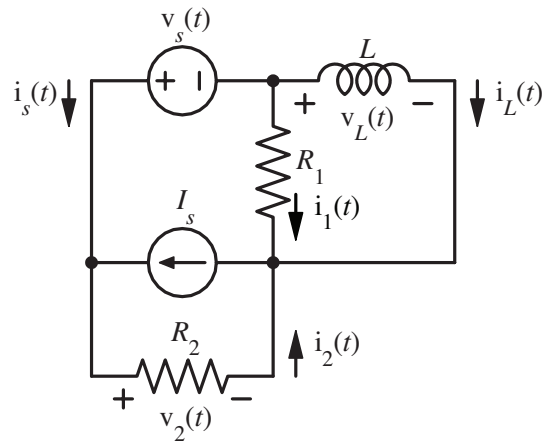$$v_C(0^-) = 12\text{V} \quad i_C(0^-) = 0\text{A} \quad v_R(0^-) = 0\text{V} \quad i_R(0^-) = 0\text{A}$$

$$v_C(0^+) = 12\text{V} \quad i_C(0^+) = -3\text{A} \quad v_R(0^+) = 0\text{V} \quad i_R(0^+) = 0\text{A}$$

$$v_C(\infty) = 78\text{V} \quad i_C(\infty) = 0\text{A} \quad v_R(\infty) = 66\text{V} \quad i_R(\infty) = 3\text{A}$$

2. Fill in the blanks with numbers.

$$v_s(t) = 10\,u(-t)\ ,\ I_s = 2A\ ,\ R_1 = 15\Omega$$
$$R_2 = 7\Omega\ ,\ L = 50\text{ mH}$$

$v_s(t)$

$$i_s(0^-) = -0.571A \quad i_L(0^-) = 0.571A \quad i_1(0^-) = 0A \quad i_2(0^-) = 1.429A$$
$$i_s(0^+) = -1.026A \quad i_L(0^+) = 0.571A \quad i_1(0^+) = 0.455A \quad i_2(0^+) = 0.974A$$
$$i_s(\infty) = -2A \qquad i_L(\infty) = 2A \qquad i_1(\infty) = 0A \qquad i_2(\infty) = 0A$$

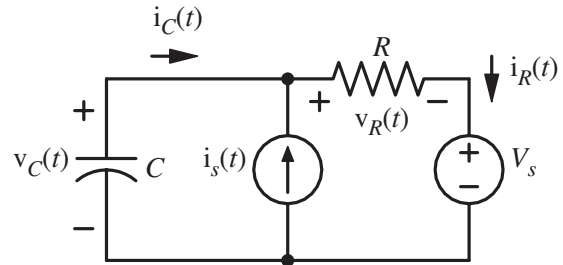$$v_L(0^-) = 0V \qquad v_2(0^-) = 10V$$
$$v_L(0^+) = 6.82V \quad v_2(0^+) = 6.82V$$
$$v_L(\infty) = 0V \qquad v_2(\infty) = 0V$$

Solution of ECE 300 Test 8 F10

1.   Fill in the blanks with numbers.

$$i_s(t) = 2u(t) \ , \ V_s = 10 \text{ V} \ , \ R = 22\Omega \ , \ C = 50\mu\text{F}$$

$i_C(t)$

$v_C(t)$ $+$

C $i_s(t)$ R $v_R(t)$ $i_R(t)$ V_s $+$ $-$

$v_C(0^-) = 10\text{V}$ $i_C(0^-) = 0\text{A}$ $v_R(0^-) = 0\text{V}$ $i_R(0^-) = 0\text{A}$
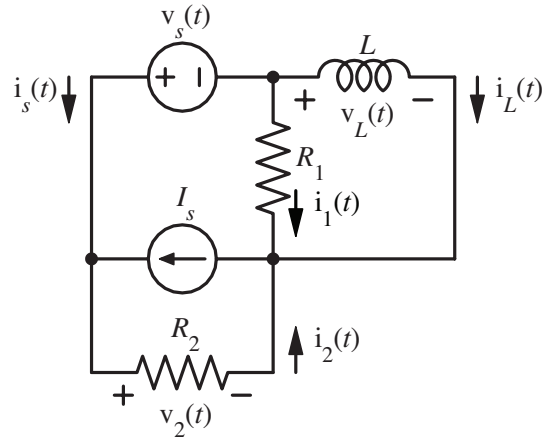
$v_C(0^+) = 10\text{V}$ $i_C(0^+) = -2\text{A}$ $v_R(0^+) = 0\text{V}$ $i_R(0^+) = 0\text{A}$

$v_C(\infty) = 54\text{V}$ $i_C(\infty) = 0\text{A}$ $v_R(\infty) = 44\text{V}$ $i_R(\infty) = 2\text{A}$

2. Fill in the blanks with numbers.

$v_s(t) = 5\,u(-t)$, $I_s = 3\text{A}$, $R_1 = 15\Omega$

$R_2 = 7\Omega$, $L = 50$ mH

$v_s(t)$

$i_s(0^-) = -2.286\text{A}$ $i_L(0^-) = 2.286\text{A}$ $i_1(0^-) = 0\text{A}$ $i_2(0^-) = 0.714\text{A}$

$i_s(0^+) = -2.513\text{A}$ $i_L(0^+) = 2.286\text{A}$ $i_1(0^+) = 0.2272\text{A}$ $i_2(0^+) = 0.487\text{A}$

$i_s(\infty) = -3\text{A}$ $i_L(\infty) = 3\text{A}$ $i_1(\infty) = 0\text{A}$ $i_2(\infty) = 0\text{A}$

$v_L(0^-) = 0\text{V}$ $v_2(0^-) = 5\text{V}$

$v_L(0^+) = 3.408\text{V}$ $v_2(0^+) = 3.408\text{V}$

$v_L(\infty) = 0\text{V}$ $v_2(\infty) = 0\text{V}$

Solution of ECE 300 Test 8 F10

1.   Fill in the blanks with numbers.

$$i_s(t) = 4\,u(t) \ , V_s = 20 \text{ V} \ , R = 22\Omega \ , C = 50\mu\text{F}$$

$i_C(t)$

$$v_C(0^-) = 20\text{V} \quad i_C(0^-) = 0\text{A} \quad v_R(0^-) = 0\text{V} \quad i_R(0^-) = 0\text{A}$$
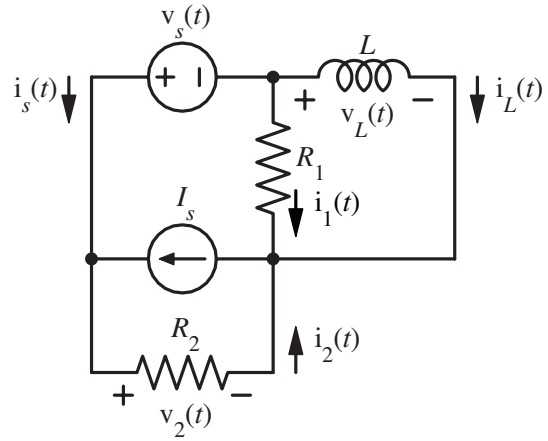
$$v_C(0^+) = 20\text{V} \quad i_C(0^+) = -4\text{A} \quad v_R(0^+) = 0\text{V} \quad i_R(0^+) = 0\text{A}$$

$$v_C(\infty) = 108\text{V} \quad i_C(\infty) = 0\text{A} \quad v_R(\infty) = 88\text{V} \quad i_R(\infty) = 4\text{A}$$

2.   Fill in the blanks with numbers.

$v_s(t) = 15\,u(-t)\ ,I_s = 4\mathrm{A}\ ,R_1 = 15\Omega$

$R_2 = 7\Omega\ ,L = 50\ \mathrm{mH}$

$i_s(0^-) = -1.857\mathrm{A}$ $i_L(0^-) = 1.857\mathrm{A}$ $i_1(0^-) = 0\mathrm{A}$ $i_2(0^-) = 2.143\mathrm{A}$

$i_s(0^+) = -2.539\mathrm{A}$ $i_L(0^+) = 1.857\mathrm{A}$ $i_1(0^+) = 0.682\mathrm{A}$ $i_2(0^+) = 1.461\mathrm{A}$

$i_s(\infty) = -4\mathrm{A}$ $i_L(\infty) = 4\mathrm{A}$ $i_1(\infty) = 0\mathrm{A}$ $i_2(\infty) = 0\mathrm{A}$

$v_L(0^-) = 0\mathrm{V}$ $v_2(0^-) = 15\mathrm{V}$

$v_L(0^+) = 10.228\mathrm{V}$ $v_2(0^+) = 10.228\mathrm{V}$

$v_L(\infty) = 0\mathrm{V}$ $v_2(\infty) = 0\mathrm{V}$