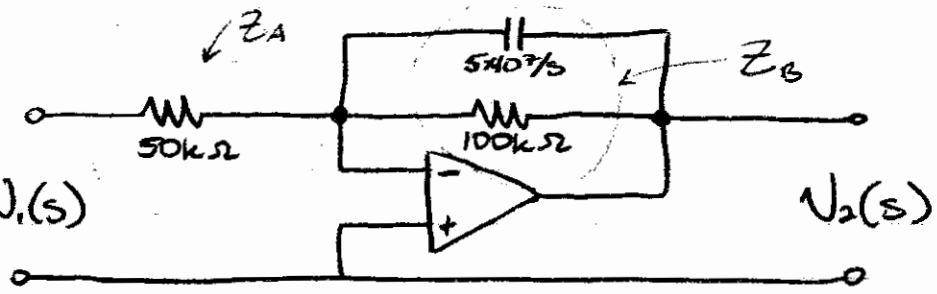
ECE 301

HW A7

Due 10/23/06

[redacted]

11.14)



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Assuming ideal op-amp, $Z_{in}=50k\Omega$ and $Z_{out}=0$

$$\frac{V_2(s)}{V_1(s)} = -\frac{Z_B}{Z_A} \rightsquigarrow Z_B = 10^5 // (5\times10^7/s) \rightsquigarrow Z_A = 50{,}000$$

$$= \frac{5\times10^{12}/s}{10^5+5\times10^7/s}\cdot\frac{5/10^5}{5/10^5}$$

$$= \frac{5\times10^7}{s+5\times10^2}$$

$$\frac{V_2(s)}{V_1(s)} = T(s) = \frac{-1000}{s+500}$$

$$Y(s) = T(s)/s = \frac{-1000}{s(s+500)}$$

p: 0, -500

z: none

$$k_1 = \frac{-1000}{500} = -2$$

$$k_2 = \frac{-1000}{-500} = 2$$

$$Y(s) = \frac{-2}{s} + \frac{2}{s+500}$$

$$\Downarrow \mathcal{L}$$

$$y(t) = [-2+2e^{-500t}]u(t)$$