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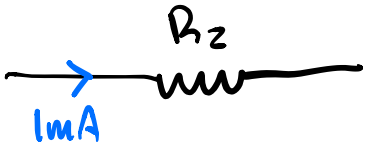
Quiz 02
09/08/2020
EE 315

$i_2 = \frac{0 - v_o}{R_2} \Rightarrow$

1.)

$R_1 = 100k\Omega$
$R_2 = 400k\Omega$
$R_L = 1k\Omega$



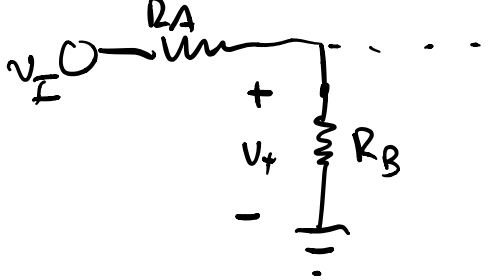
$V = IR$
$V = (1mA)(400k\Omega)$
$(1\times10^{-3})(400\times10^{3}) = 400V$

$G_T = \frac{400k\Omega}{100k\Omega} = 4\ V/V$

2.)

$R_1 = 10k\Omega$
$R_2 = 250k\Omega$
$R_A = 10k\Omega$
$R_B = 45k\Omega$

$G_T = ?$ $G = \frac{v_o}{v_I}$ $R_i = \infty$



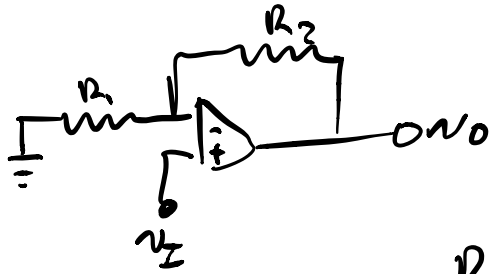
$v_t = v_I\left(\frac{45}{55}\right)$ $\frac{v_o}{v_t} = \left(1 + \frac{250}{10}\right)$

$\frac{v_o}{v_I} = \left(\frac{45}{55}\right)\left(1 + \frac{250}{10}\right) = (26)(0.81\overline{81})$

$\frac{v_o}{v_I} = G_T = 21.27\ V/V$

3.)

- noninverting
- $R_1 = 10k\Omega$
- $R_2 = 50k\Omega$
- $A = 10{,}000\ V/V$



$R_2/R_1 = 5k\Omega$

$G_T = \frac{1 + R_2/R_1}{1 + 1/A\,(1 + R_2/R_1)}$ $\frac{1+5}{1 + 1/10{,}000(1+5)}$

$G_T = \frac{6}{1 + 1/10{,}000\,(6)} = 5.996$