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Quiz 02
09/08/2020
EE 315

$i_2 = \frac{0 - v_0}{R_2} \Rightarrow$

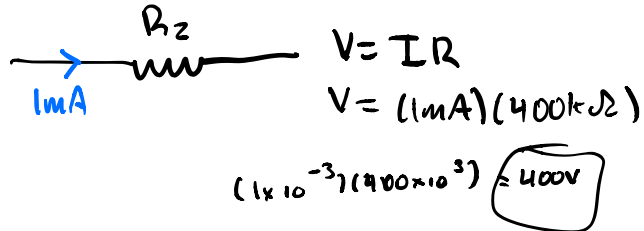**1.)**

$R_1 = 100k\Omega$

$R_2 = 400k\Omega$

$R_L = 1k\Omega$

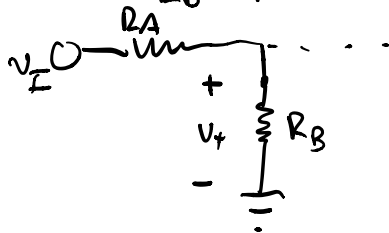$G_T = \frac{400k\Omega}{100k\Omega} = 4 \, V/V$

R_2

$1mA$

$V = IR$

$V = (1mA)(400k\Omega)$

$(1\times10^{-3})(400\times10^3) = 400V$

2.)

$R_1 = 10k\Omega$

$R_2 = 250k\Omega$

$R_A = 10k\Omega$

$R_B = 45k\Omega$

R_A

v_I

$+$

v_+ R_B

$-$

$G = ?$ $G = \frac{v_0}{v_I}$ $R_i = \infty$

$v_+ = v_I \left(\frac{45}{55}\right)$ $\frac{v_0}{v_+} = \left(1 + \frac{250}{10}\right)$

$\frac{v_0}{v_I} = \left(\frac{45}{55}\right)\left(1 + \frac{250}{10}\right) = (26)(0.81\overline{81})$
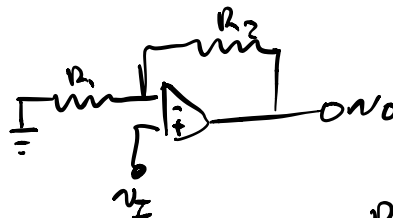
$\frac{v_0}{v_I} = G = 21.27 \, V/V$

3.)

• non inverting

• $R_1 = 10k\Omega$

• $R_2 = 50k\Omega$

• $A = 10,000 \, V/V$

R_2

R_1

v_I

v_0

$R_2/R_1 = 5k\Omega$

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

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

$$1 + 5 = 6 \qquad \frac{6}{1 + \frac{1}{10,000}(6)} \qquad = \frac{6}{1 + \frac{6}{10,000}}$$