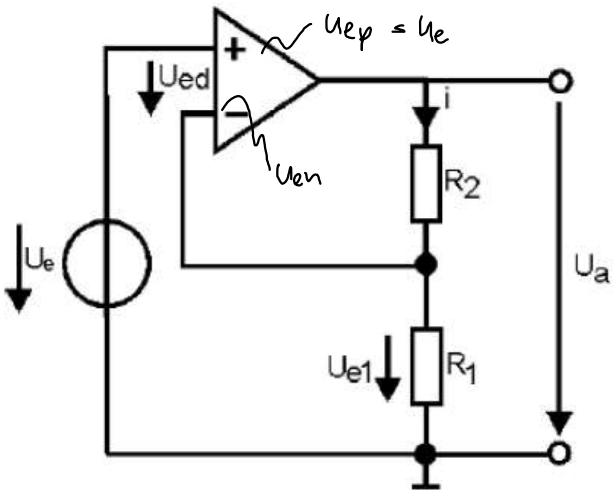

$$V_g = \frac{u_a}{u_{ep} - u_{en}} \qquad \beta = \frac{-u_{ed}}{u_a}$$

$$V_{r\infty} = \frac{u_a}{u_e} = \frac{R_1 + R_2}{R_1}$$

$$V_r = V_{r\infty} \cdot F$$

$$u_{en} = u_e - u_{ed} = u_{e1} \qquad u_{e1} = u_a \cdot \frac{R_1}{R_1 + R_2}$$

$$V_g = \frac{u_a}{u_e - u_{e1}} \Rightarrow \frac{u_a}{u_e - u_a \frac{R_1}{R_1 + R_2}}$$

$$u_e - u_a \frac{R_1}{R_1 + R_2} = \frac{u_a}{V_g} \quad / : u_a \rightarrow \frac{u_e}{u_a} - \frac{R_1}{R_1 + R_2} = \frac{1}{V_g} \quad / + \frac{R_1}{R_1 + R_2} \rightarrow$$

$$\rightarrow \frac{u_e}{u_a} = \frac{1}{V_g} + \frac{R_1}{R_1 + R_2} = \frac{R_1 + R_2 + R_1 V_g}{V_g (R_1 + R_2)} \rightarrow \frac{u_e}{u_a} = \frac{R_1 (1 + V_g) + R_2}{V_g (R_1 + R_2)} \quad / \uparrow^{-1} \rightarrow$$

$$\rightarrow \frac{u_a}{u_e} = \frac{V_g (R_1 + R_2)}{R_1 (1 + V_g) + R_2} \rightarrow \frac{u_a}{u_e} = \frac{R_1 + R_2}{R_1} \cdot \frac{V_g}{1 + V_g + \frac{R_2}{R_1}} = \frac{R_1 + R_2}{R_1} \cdot \frac{1}{1 + \frac{1}{V_g} + \frac{R_2}{R_1 V_g}} \rightarrow$$

$$\rightarrow \frac{u_a}{u_e} = \frac{R_1 + R_2}{R_1} \cdot \frac{1}{\frac{R_1 + R_2}{V_g R_1}}$$

NR: $\beta = \frac{u_{en} - u_{ep}}{u_a}$

Superpos: $u_a = 0 : u'_{en} = 0 ; u'_{ep} = u_e$

$u_e = 0 : u''_{en} = u_a \cdot \frac{R_1}{R_1 + R_2} ; u''_{ep} = 0$

$$u_{en} = u_a \cdot \frac{R_1}{R_1 + R_2} \qquad u_{ep} = u_e$$

$$u_{ed} = u_{ep} - u_{en} = u_e - u_a \cdot \frac{R_1}{R_1 + R_2}$$

$$\beta = \frac{-u_{ed}}{u_a} \rightarrow \beta u_a = -u_{ed} = -\frac{u_a}{V_g}$$