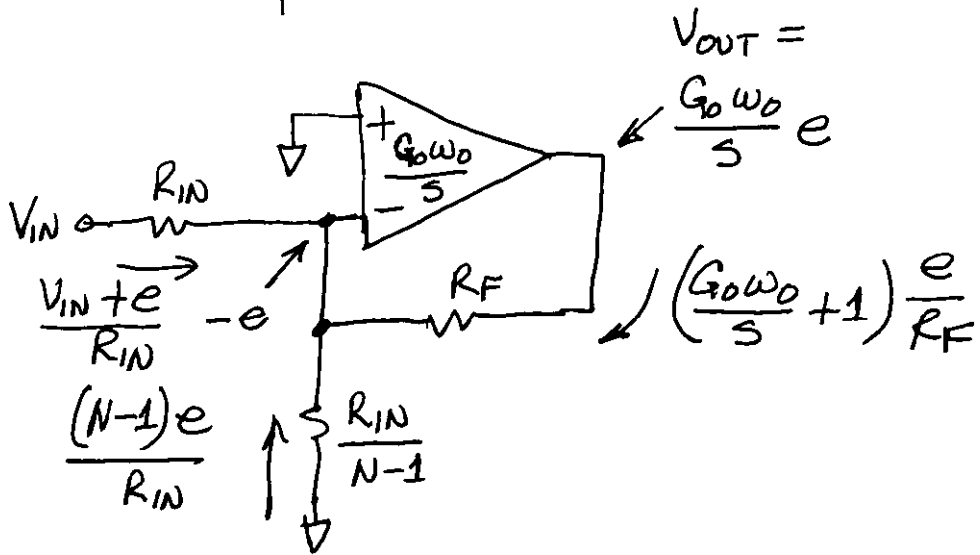


IGNORING VOS:

$G_0 \omega_0 = \text{GAIN-BANDWIDTH}$



$$e = V_{OUT} \frac{s}{G_0 \omega_0}$$

$$\frac{V_{IN} + e}{R_{IN}} + \frac{(N-1)e}{R_{IN}} + \left(\frac{G_0 \omega_0}{s} + 1\right) \frac{e}{R_F} = 0$$

$$-\frac{V_{IN}}{R_{IN}} = e \left[\frac{N}{R_{IN}} + \left(\frac{G_0 \omega_0}{s} + 1\right) \frac{1}{R_F} \right]$$

$$-\frac{V_{IN}}{R_{IN}} = V_{OUT} \frac{s}{G_0 \omega_0} \left[\frac{N}{R_{IN}} + \left(\frac{G_0 \omega_0}{s} + 1\right) \frac{1}{R_F} \right]$$

$$\frac{V_{OUT}}{V_{IN}} = -\frac{G_0 \omega_0}{s} \cdot \frac{1}{N + \left(\frac{G_0 \omega_0}{s} + 1\right) \frac{R_{IN}}{R_F}}$$

$$\frac{V_{OUT}}{V_{IN}} = -\frac{G_0 \omega_0}{s} \cdot \frac{R_F}{R_{IN}} \cdot \frac{1}{\frac{R_F}{R_{IN}} \cdot N + \left(\frac{G_0 \omega_0}{s} + 1\right)}$$

THIS MORE INPUTS REDUCES
EFFECTIVE GAIN-BANDWIDTH,
PARTICULARLY FOR LARGE $\frac{R_F}{R_{IN}}$