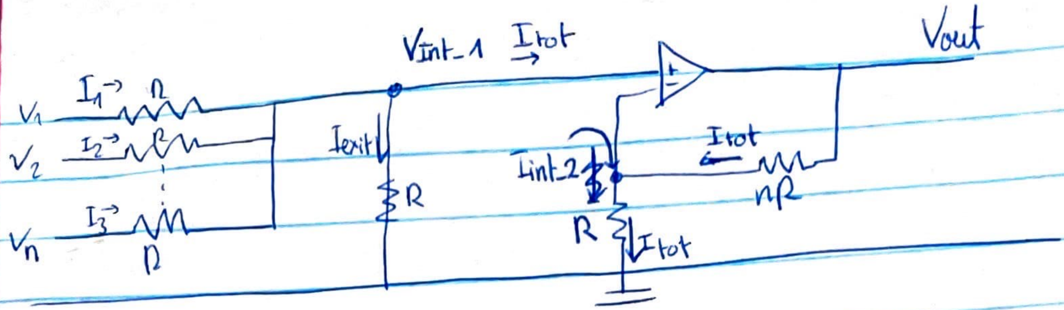

- $I_1 = \dfrac{V_1 - V_{int\_1}}{R}$; $I_2 = \dfrac{V_2 - V_{int\_1}}{R}$; $I_3 = \dfrac{V_3 - V_{int\_1}}{R}$

$\hookrightarrow \quad I_n = \dfrac{V_n - V_{int\_1}}{R}$

- $I_{tot} = (I_1 + I_2 + I_3 + \ldots + I_n) - I_{exit}$

$\Rightarrow 0 = (I_1 + I_2 + I_3 + \ldots + I_n) - I_{exit}$

$\Leftrightarrow 0 = \left(\dfrac{V_1 - V_{int\_1}}{R} + \dfrac{V_2 - V_{int\_1}}{R} + \ldots + \dfrac{V_n - V_{int\_1}}{R}\right) - \dfrac{V_{int\_1}}{R}$

$\Leftrightarrow V_{int\_1} + n V_{int\_1} = V_1 + V_2 + \ldots + V_n$ (*)

$\Leftrightarrow V_{int\_1} = \dfrac{(V_1 + V_2 + \ldots + V_n)}{(n+1)}$

- $I_{tot} = \dfrac{V_{out} - V_{int\_2}}{nR}$ & $I_{tot} = \dfrac{V_{int\_2}}{R}$

$\Rightarrow \dfrac{V_{out} - V_{int\_2}}{n} = V_{int\_2}$

$\Leftrightarrow V_{out} = V_{int\_2}(n+1)$

$V_{int\_2} = V_{int\_1}$, SO: $V_{out} = V_{int\_1}(n+1)$ (**)

(*) into (**): $V_{out} = V_{int\_1}(n+1)$

$\Leftrightarrow V_{out} = \dfrac{(V_1 + V_2 + \ldots + V_n)}{\cancel{(n+1)}} \cancel{(n+1)}$

$\Leftrightarrow \boxed{V_{out} = V_1 + V_2 + \ldots + V_n}$