



NEGATIVE FEEDBACK $\Rightarrow V_{err} = 0 \Rightarrow V_{in} = V_{R3}$ ①

HIGH-IMPEDANCE OF AMPLIFIER INPUTS $\Rightarrow i_{R2} = i_{R3}$ ②

$\Rightarrow \frac{V_{R3}}{R3} = \frac{V_{R2}}{R2}$ ③

$V_{out} = V_{R2} + V_{R3}$ ④

SUB ③ INTO ④ $\Rightarrow V_{out} = V_{R3} \frac{R2}{R3} + V_{R3}$ ⑤

SUB ① INTO ⑤ $\Rightarrow V_{out} = V_{in} \left(1 + \frac{R2}{R3}\right)$ ⑥

$V_{LS} + V_{R4} = V_{out}$ ⑦

SUB ⑥ INTO ⑦ $\Rightarrow V_{LS} = \underbrace{V_{in} \left(1 + \frac{R2}{R3}\right)}_{\text{AN EXACT, NON-DISTORTED MULTIPLE OF THE INPUT SIGNAL}} - \underbrace{V_{R4}}_{\text{AN ERROR VOLTAGE OUTSIDE THE FEEDBACK LOOP}}$

THE THING WE WANT TO BE AN EXACT, NON-DISTORTED MULTIPLE OF THE INPUT SIGNAL

AN EXACT, NON-DISTORTED MULTIPLE OF THE INPUT SIGNAL

AN ERROR VOLTAGE OUTSIDE THE FEEDBACK LOOP