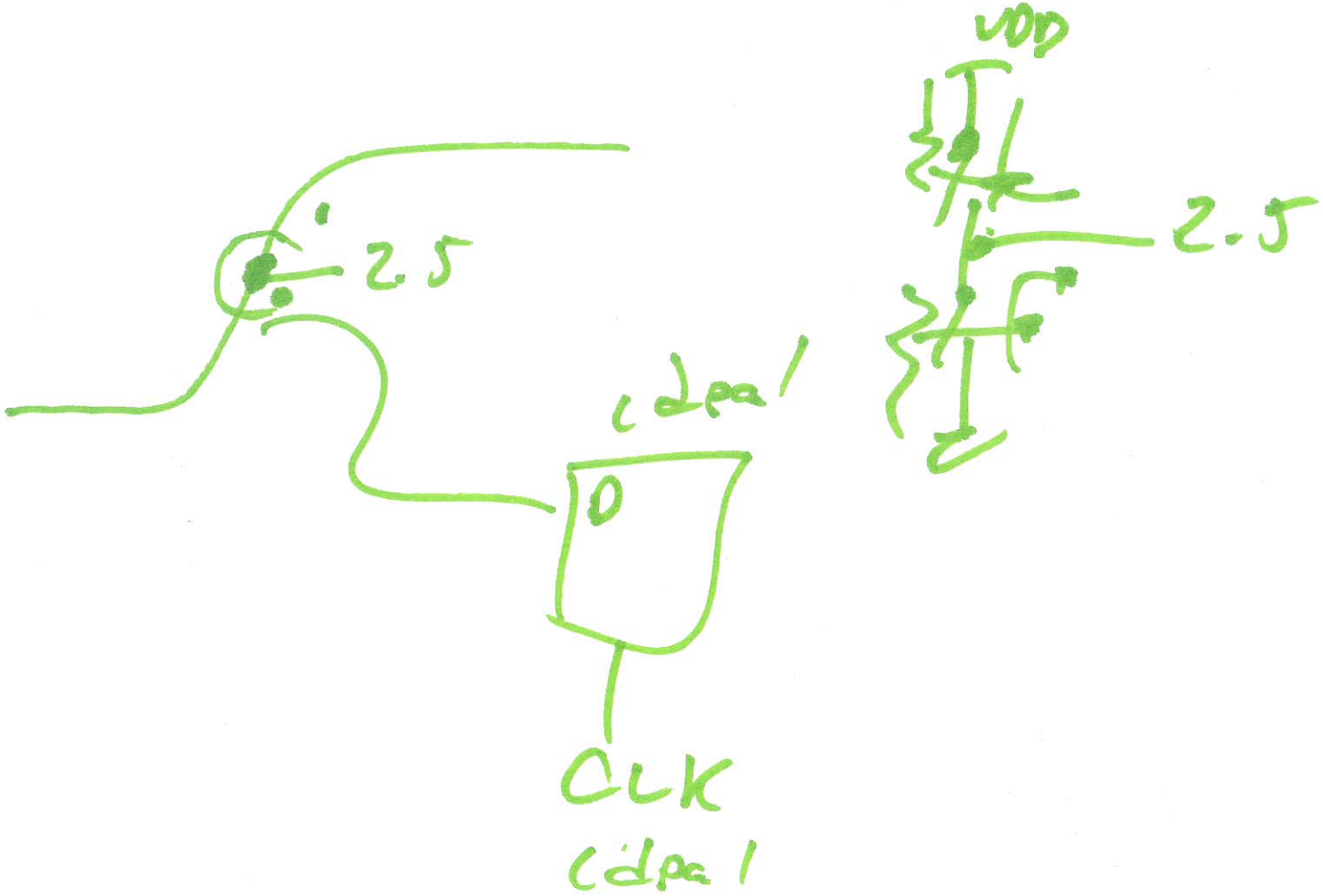
Lecture 19

Oct. 29, 2014



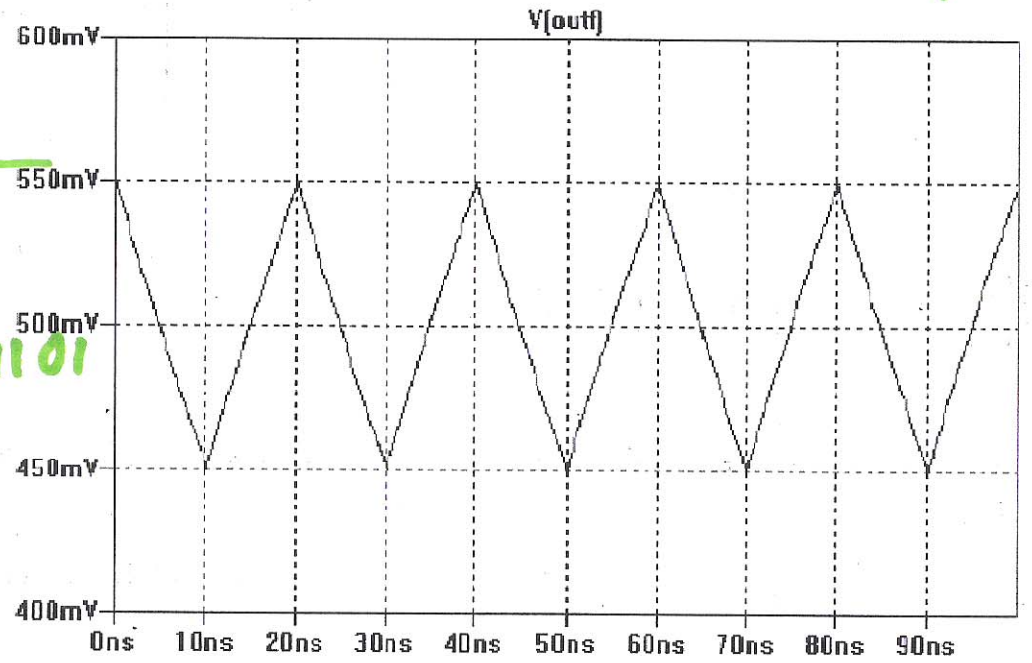


Figure 7.9 Showing how filtering the output of a modulator results in ripple.

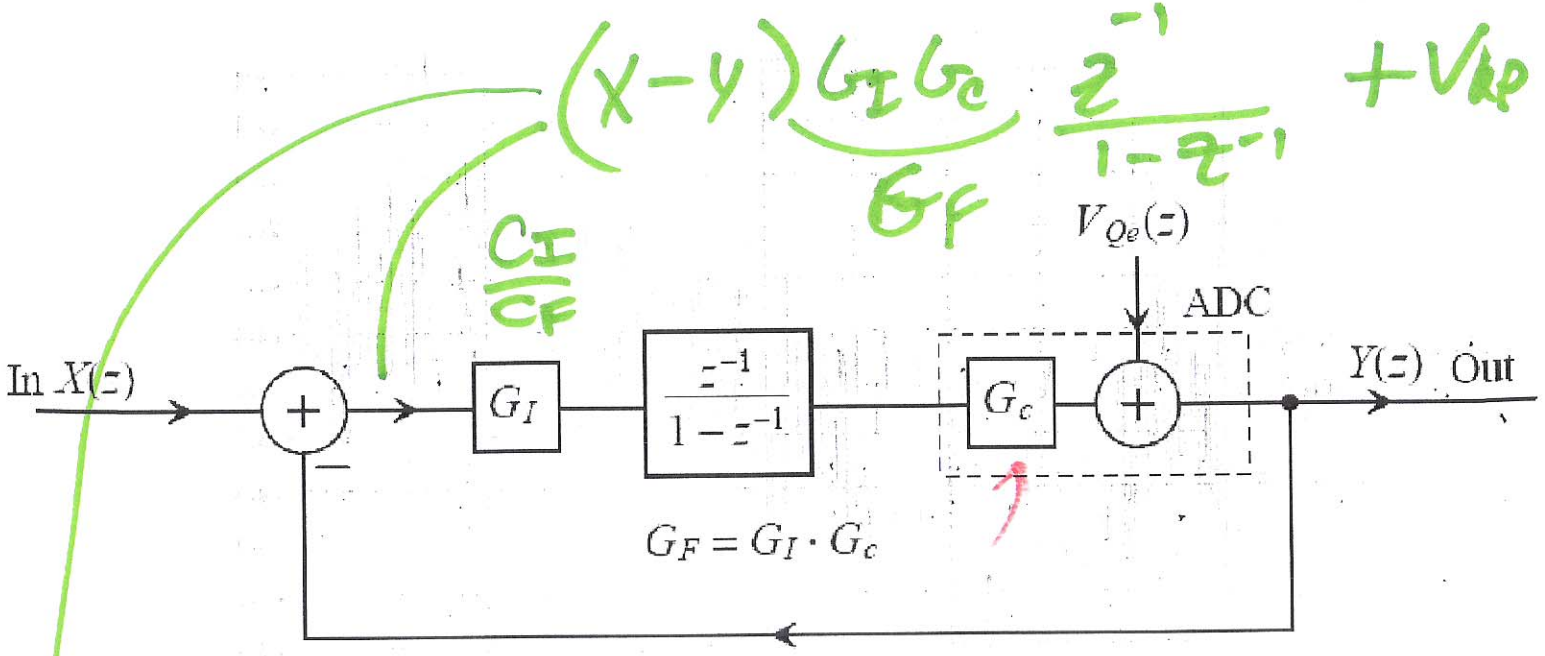
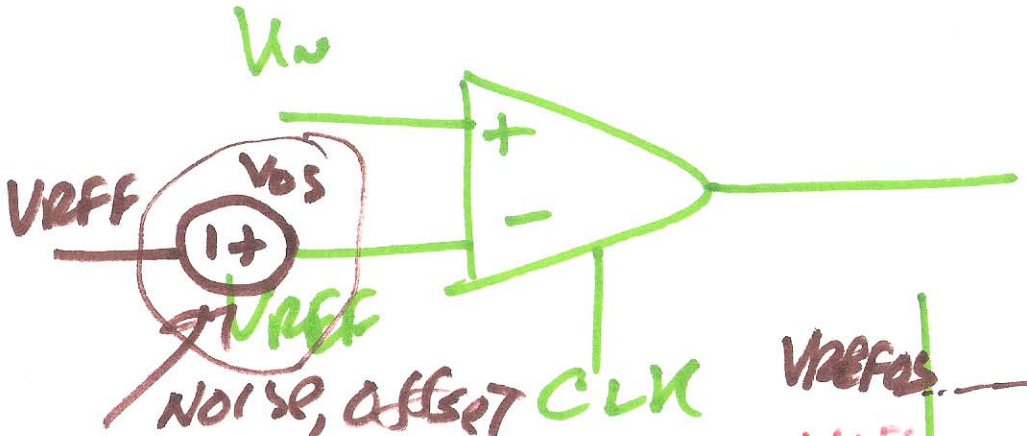
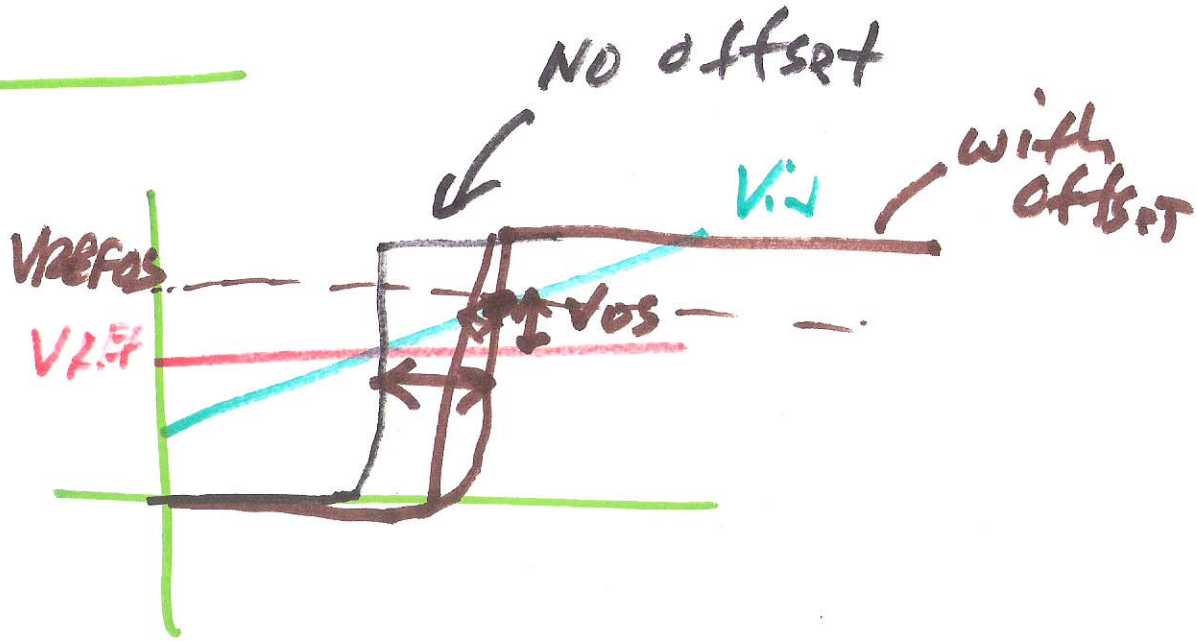
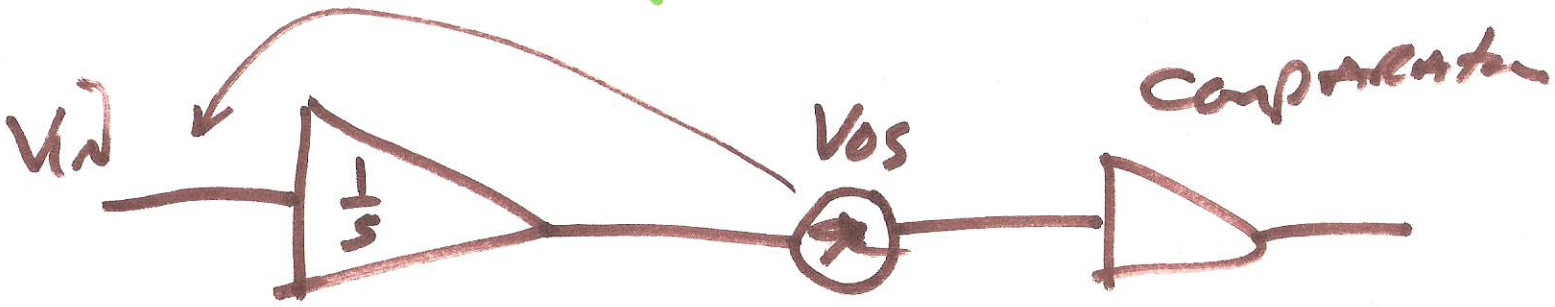


Figure 7.13 Block diagram of a NS modulator showing forward gains.







$$V_{os}' \cdot \frac{1}{s} = V_{os} \Rightarrow V_{os}' = \frac{V_{os}}{s}$$

$$V_{OUT}[nT_S] = A_{OL}(f)\cdot\left(V_{IN}[nT_S] - V_{em}\right)$$

$$V_{IN}[nT_S] = \frac{V_{OUT}[nT_S]}{A_{OL}(f)}$$

$$Q_2 = C_1\left(V_{em} - \frac{V_{OUT}[nT_S]}{A_{OL}(f)} - v_c[nT_S]\right)$$

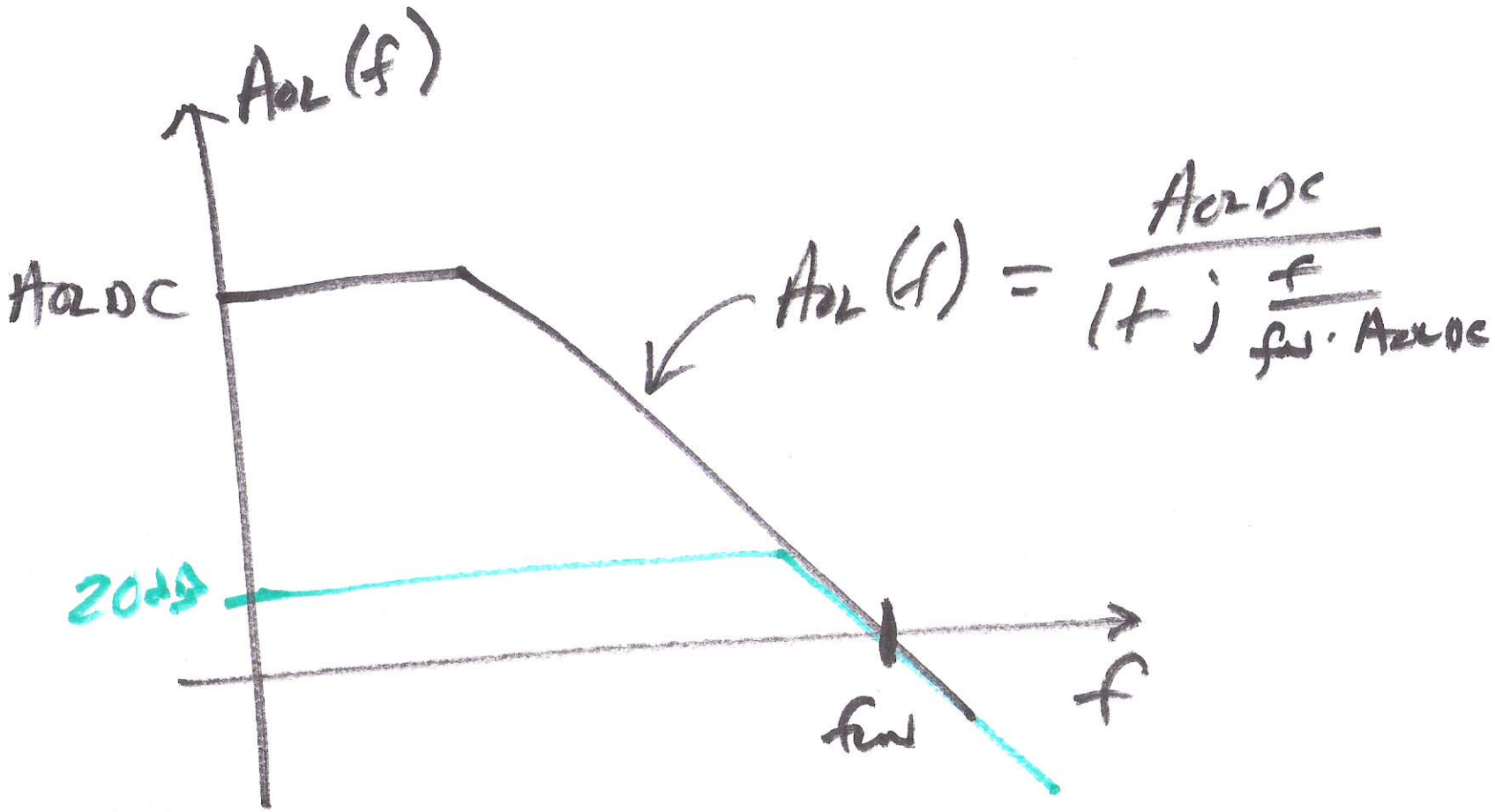
$$0 = \varepsilon_{gain}^2 \cdot \frac{f_S}{2k} = \left(\frac{1}{A_{OL}}\cdot\frac{C_I}{C_F}\right)^2 \cdot \frac{f_S}{2k}$$

$A_{OL} > K \propto \frac{1}{K^3}$

$\varepsilon_{gain} << 1$

$\frac{1}{A_{OL}}\frac{C_I}{C_F} << 1$

$A_{OL} >> 1$



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