LMS adaptation

Note Title 26-09-2007

$$\bar{c}[n+1] = \bar{c}[n] - \mu \cdot e \cdot \bar{x}$$

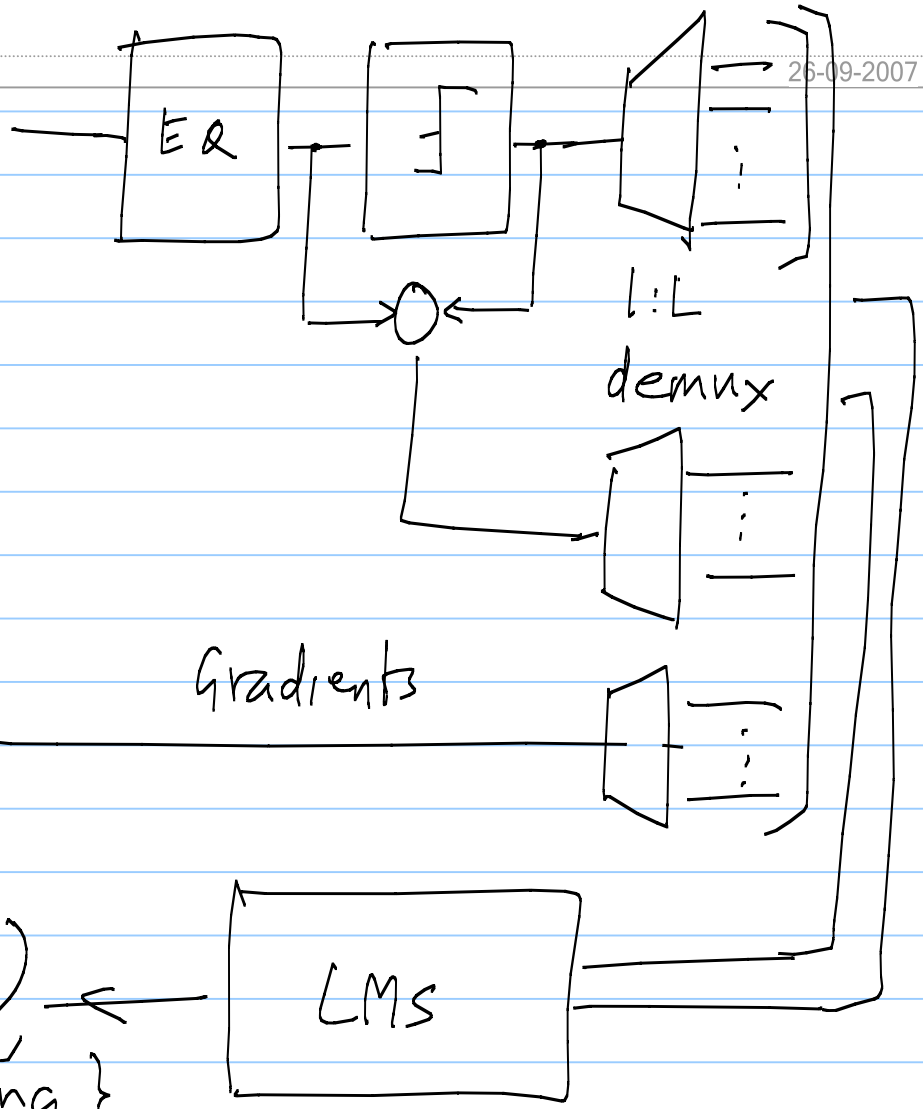
Coefficient updating:
once in L cycles

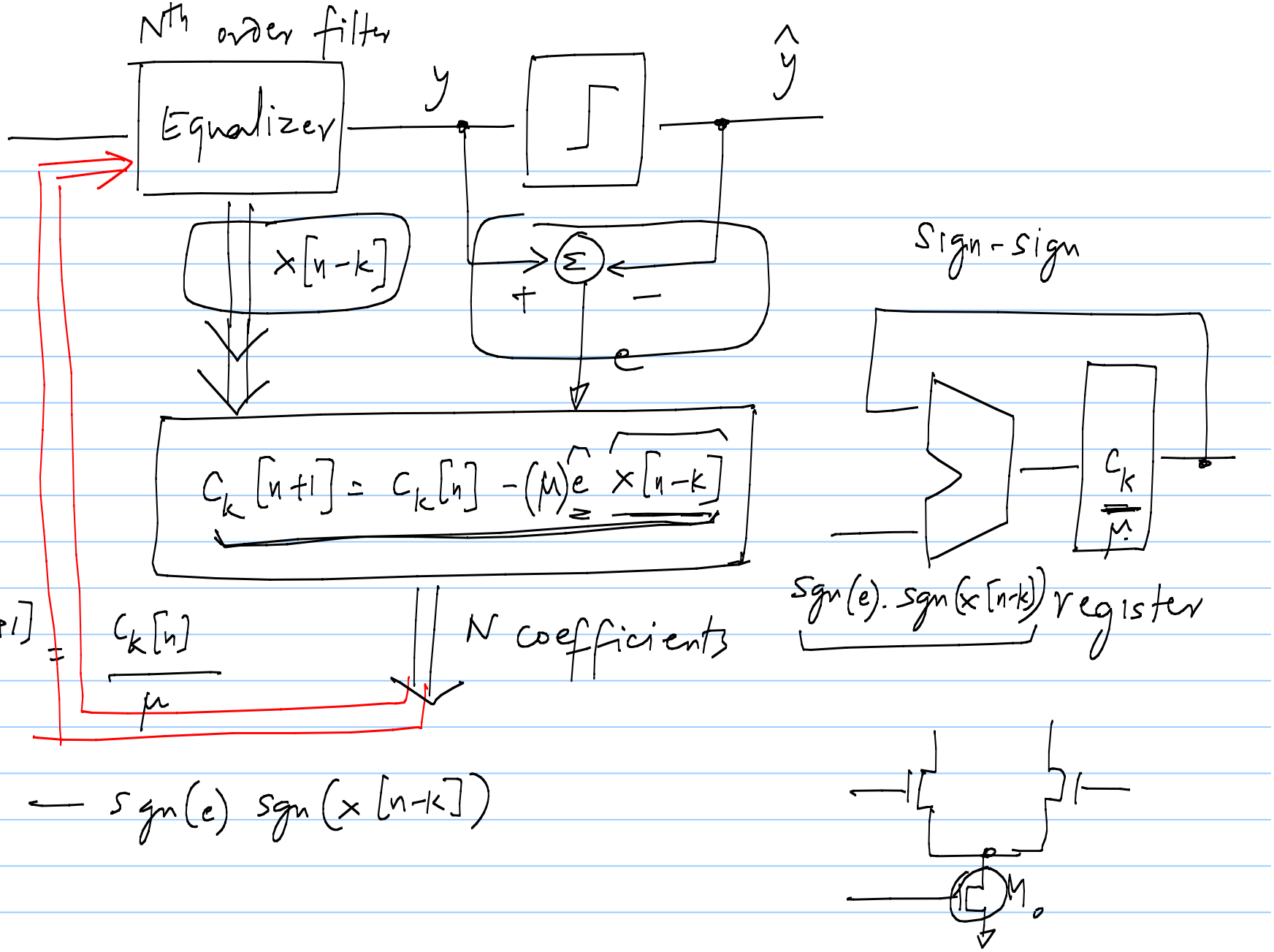
sign-sign LMS.

$$-\mu \cdot \underbrace{sgn(e) \cdot sgn(x[n-k])}$$

Increment by $-\mu$

When $\sum \underbrace{sgn(e)\, sgn(x[n-k])}$ crosses M $\{\Rightarrow$ averaging$\}$

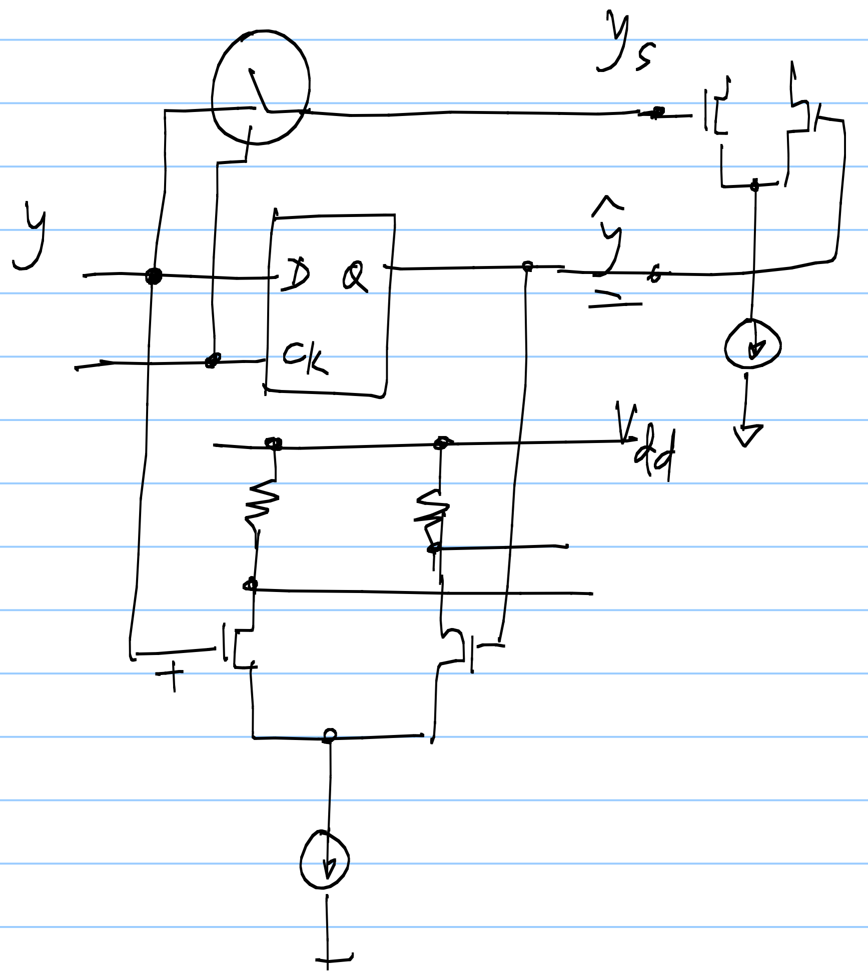



N^th order filter
Equalizer
y
ŷ
x[n-k]
Σ
+
−
e
C_k[n+1] = C_k[n] − (μ) ê x[n-k]
N coefficients
C_k[n+1]/μ = C_k[n]/μ − sgn(e) sgn(x[n-k])
Sign-sign
C_k
μ
sgn(e). sgn(x[n-k]) register
M

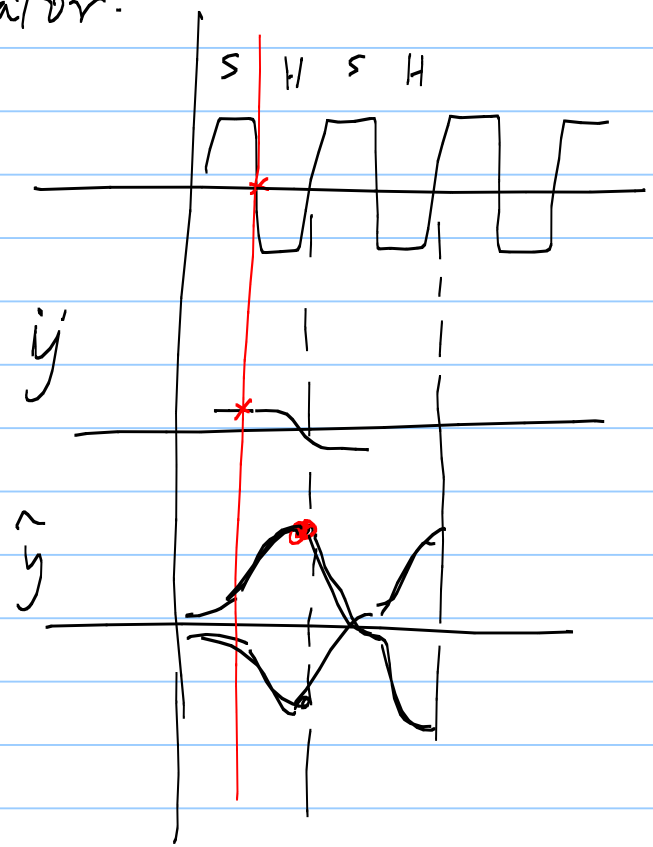
$\mathrm{sgn}(y-\hat{y})$

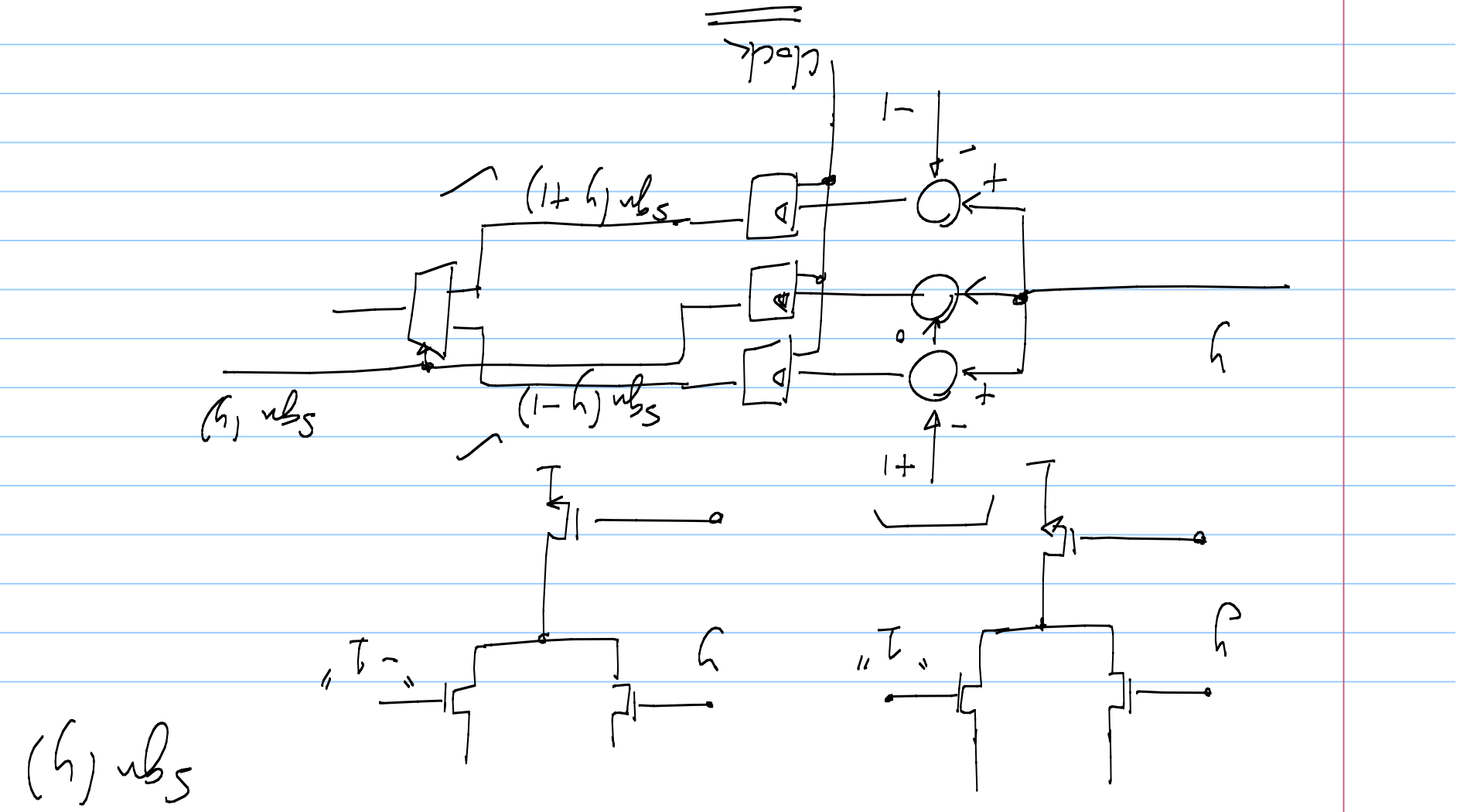
$\mathrm{sgn}(y-1)$

$\mathrm{sgn}(y+1)$

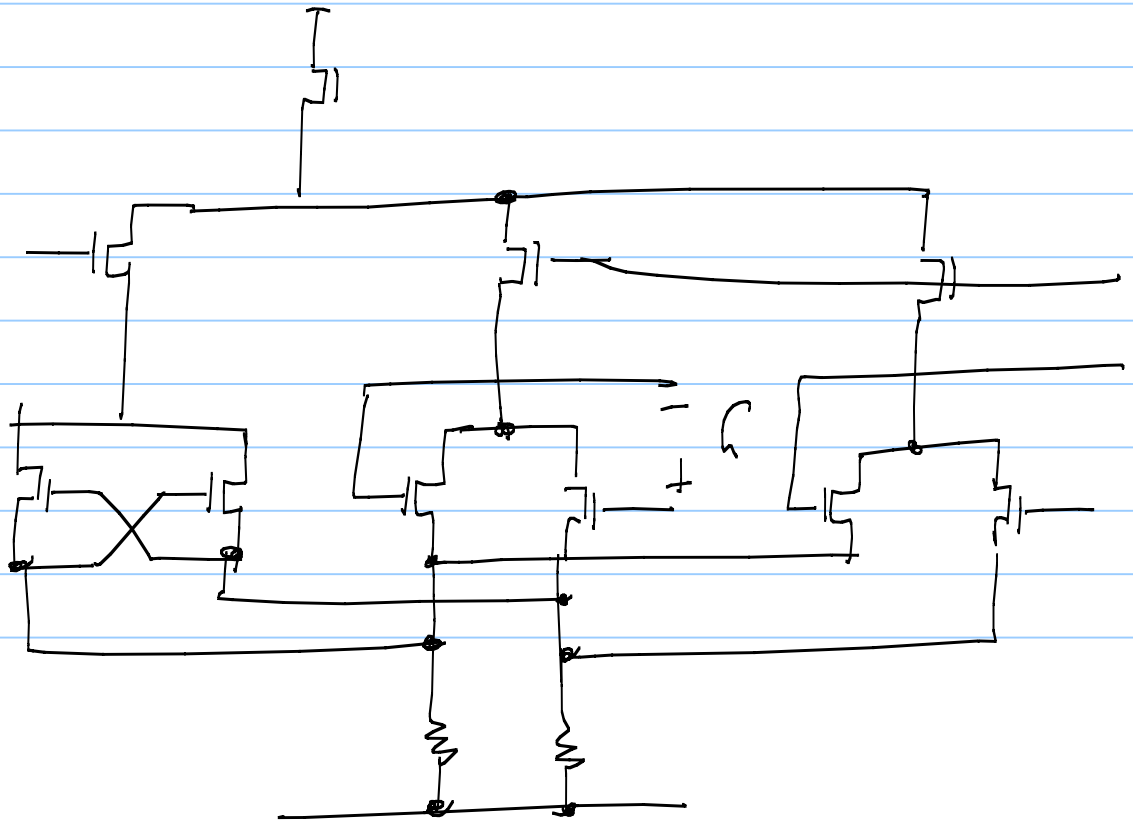


Regenerative Comparator.





(η) v_{bs}


−
+
(1-h) wbs

output = $A(X_1 - X_2)$

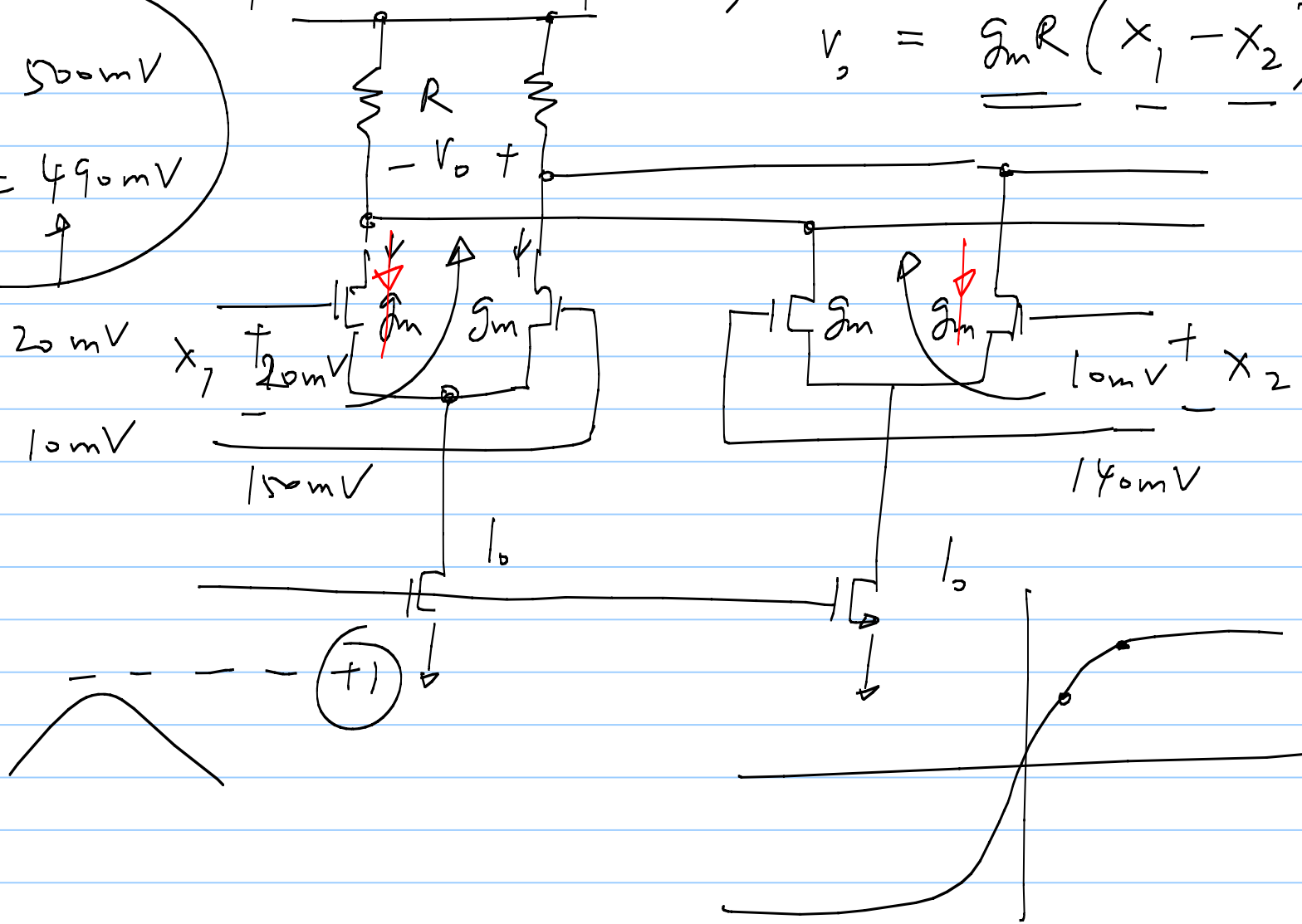
$V_o = g_m R (X_1 - X_2)$

$X_1 = 500mV$

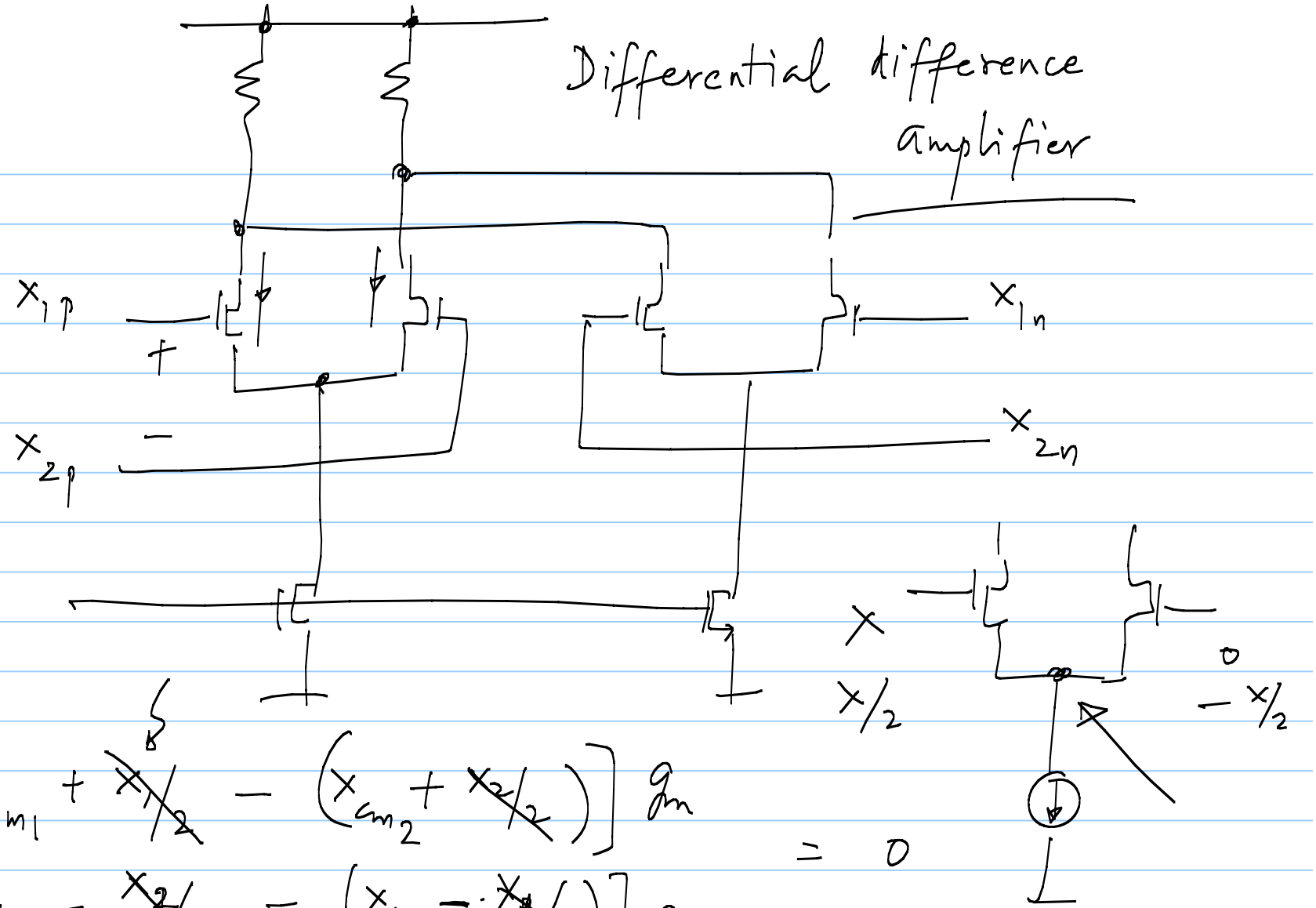
$X_2 = 490mV$

$X_1 = 20mV$

$X_2 = 10mV$



Differential difference amplifier



$$\left[x_{cm_1} + \cancel{x_1/2} - \left(x_{cm_2} + \cancel{x_2/2}\right)\right] g_m$$

$$+ \left[x_{cm_2} - \cancel{x_2/2} - \left(x_{cm_1} - \cancel{x_1/2}\right)\right] g_m$$

$$= 0$$