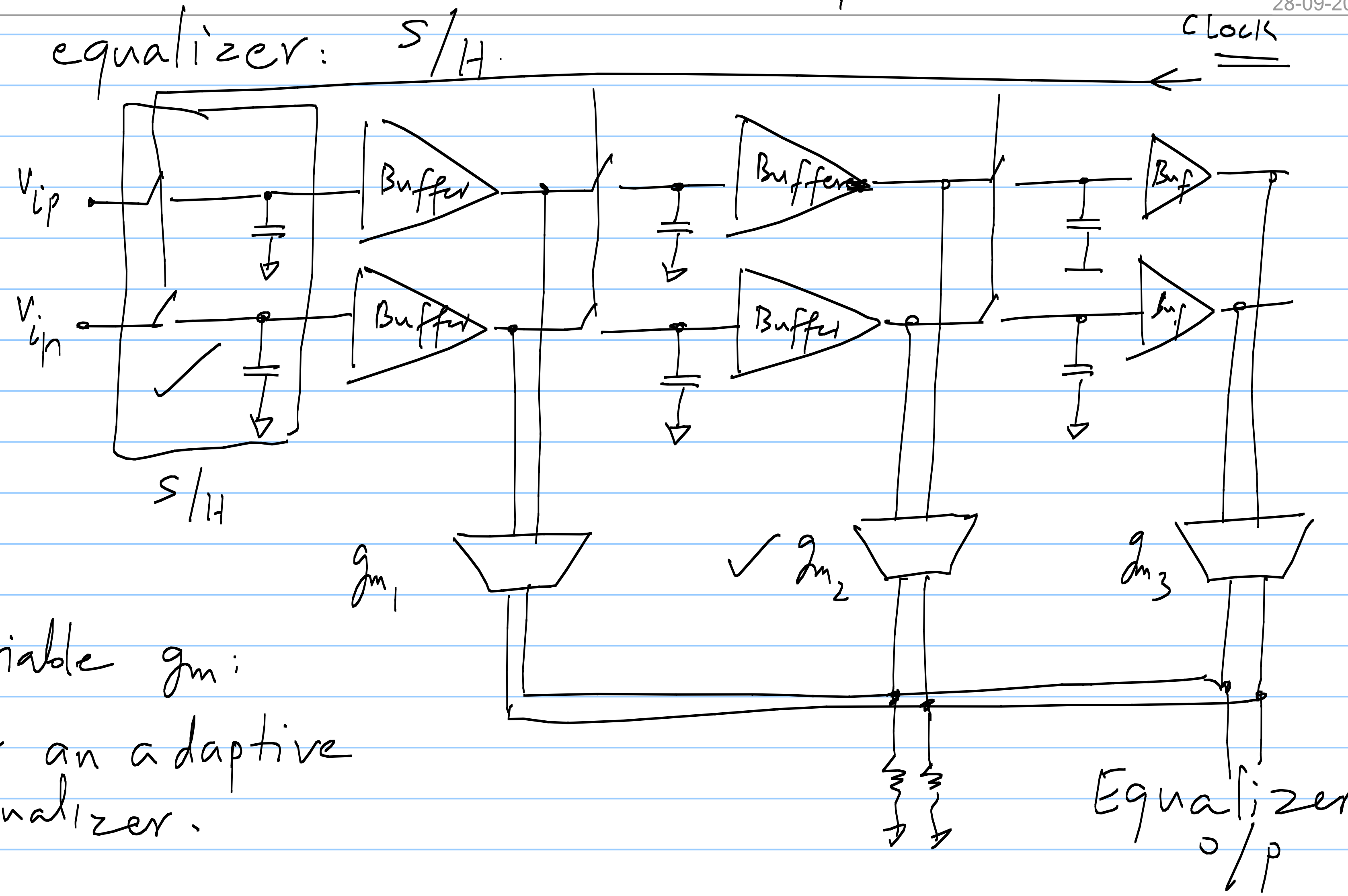
# LMS adaptation

$$\frac{c_0}{\alpha_0}\left(\alpha_0 x[n]\right) + \frac{c_1}{\alpha_1}\left(\alpha_1 x[n-1]\right) + \frac{c_2}{\alpha_2}\left(\alpha_2 x[n-2]\right)$$

Note Title 28-09-2007

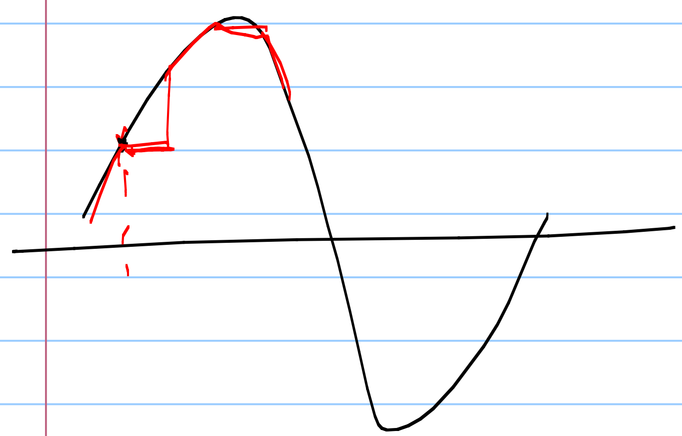
$R_x$ equalizer: S/H.



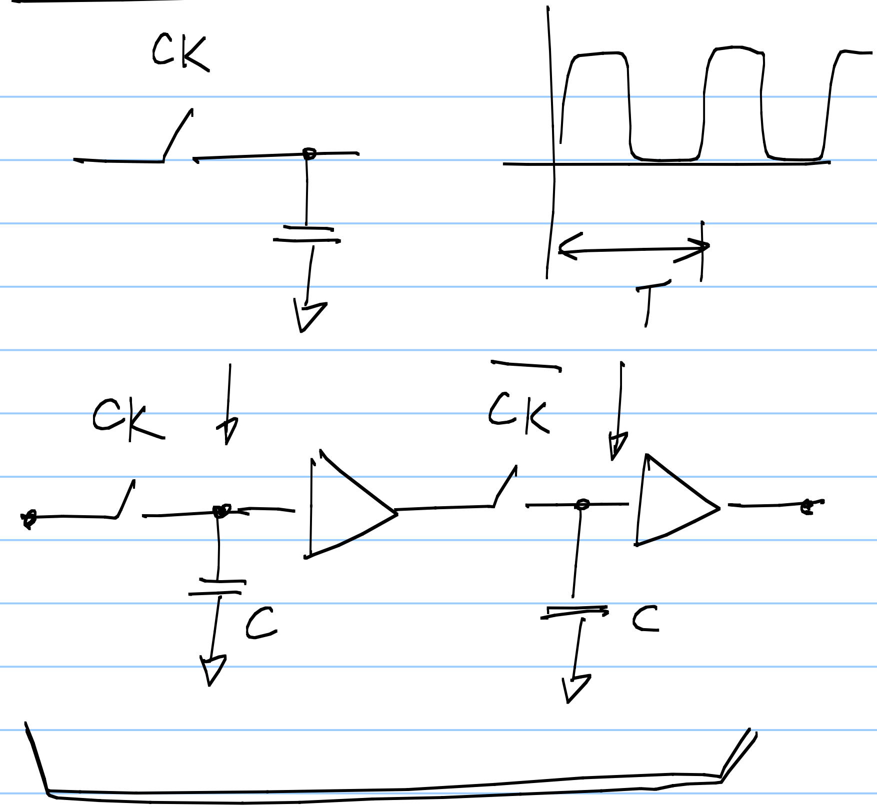

Variable $g_m$:
for an adaptive equalizer.

Buffer gain $\neq 1$

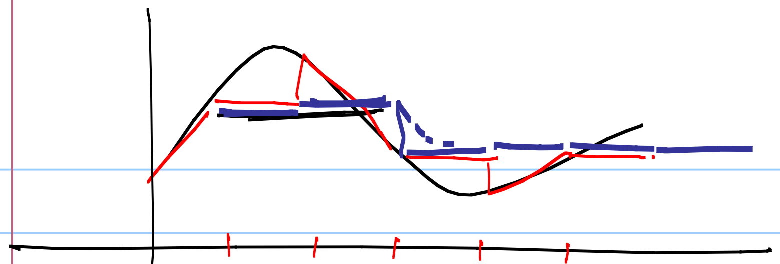
Adapting the coefficient takes care of appropriately scaling the $g_m$ values.

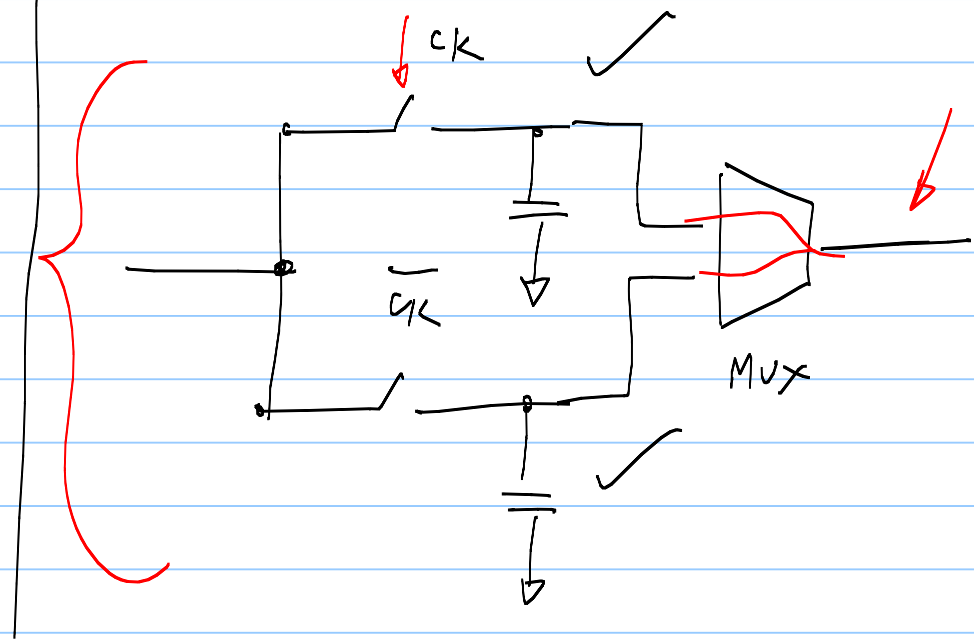


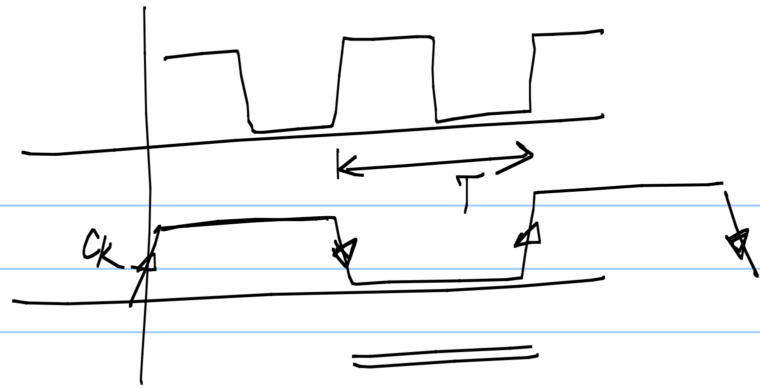
S/H circuit

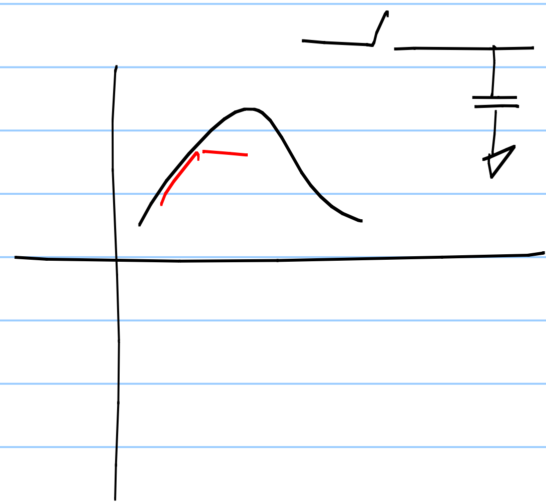


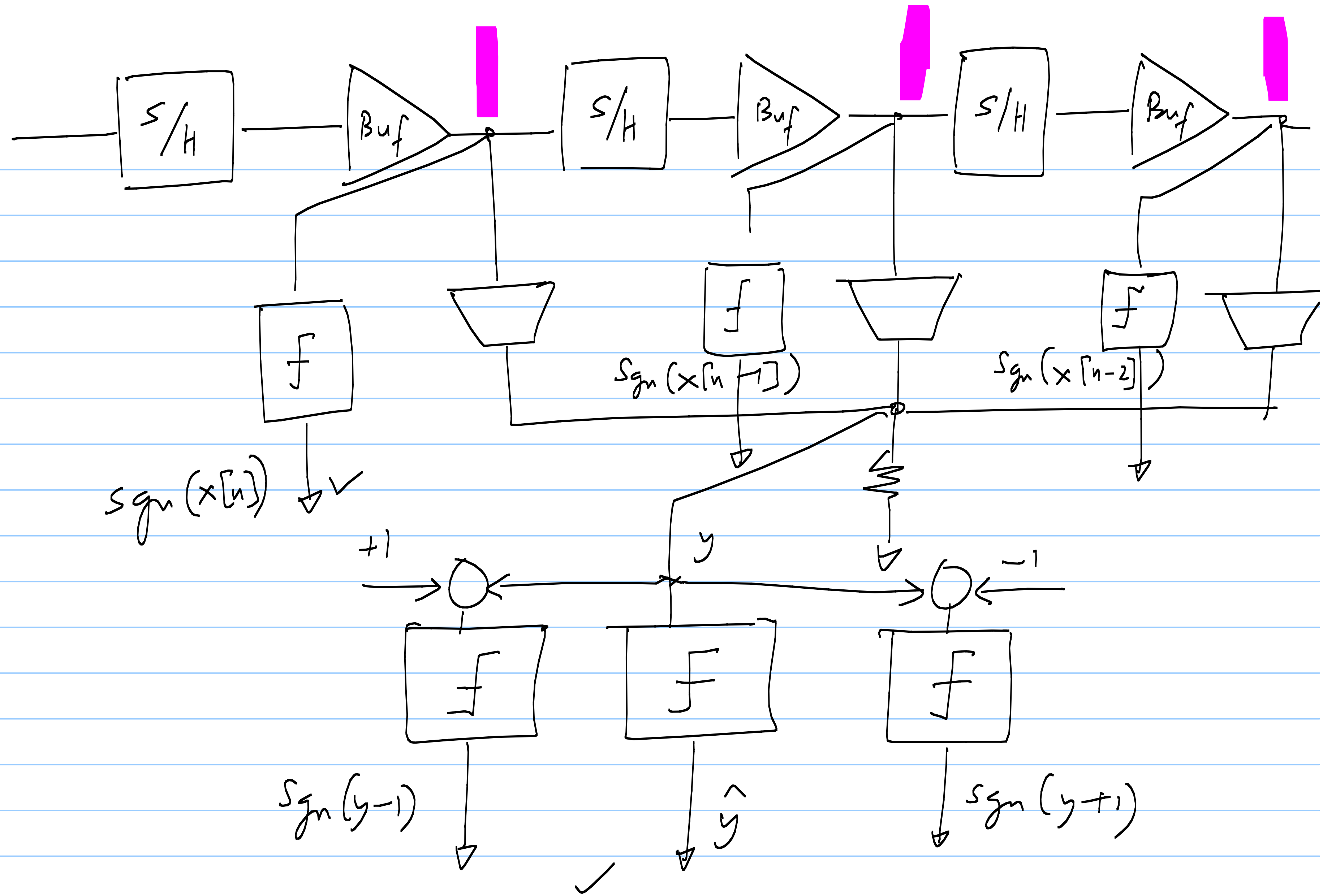

Each S/H block




CK
$\overline{CK}$
MUX

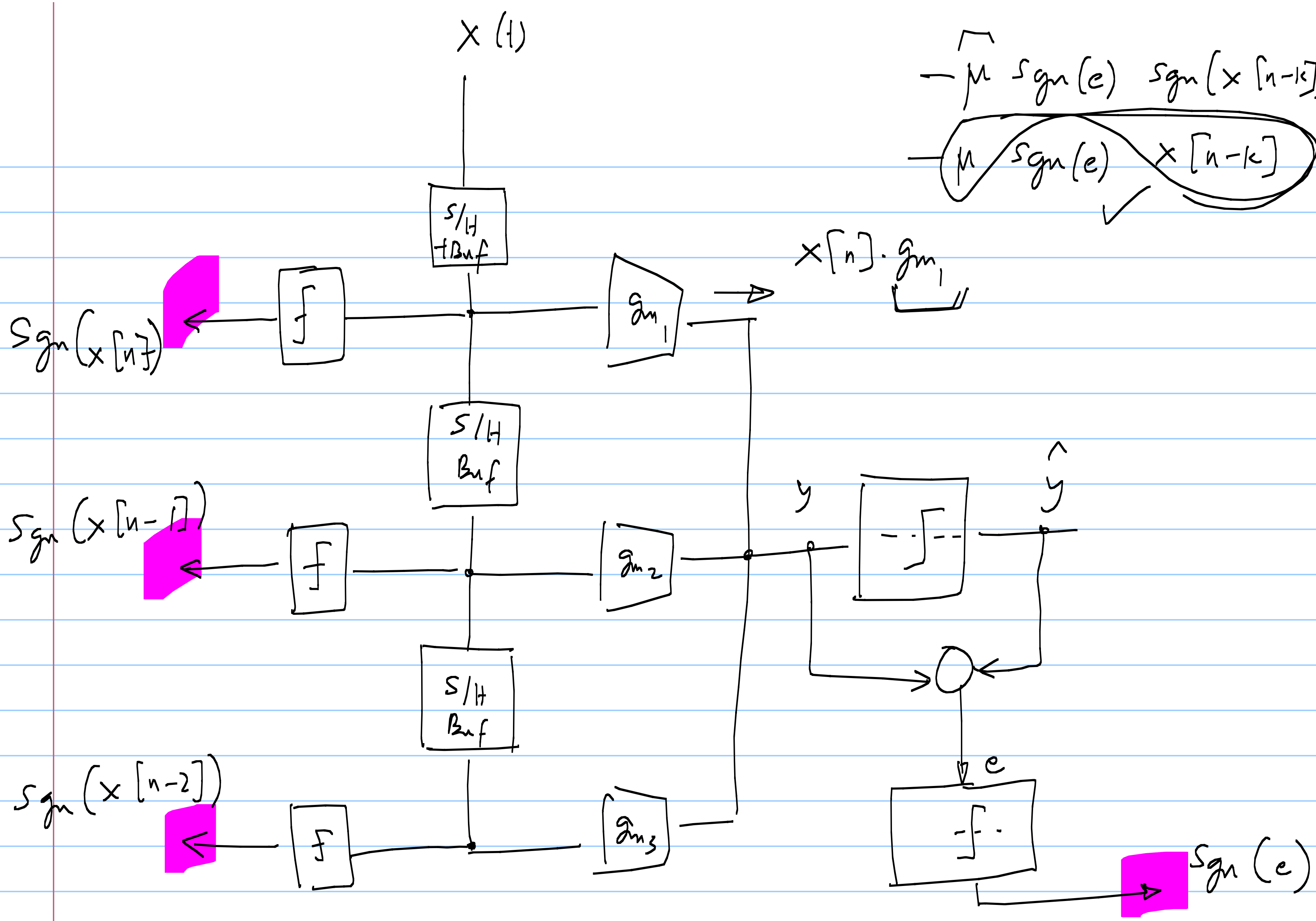

CK
T

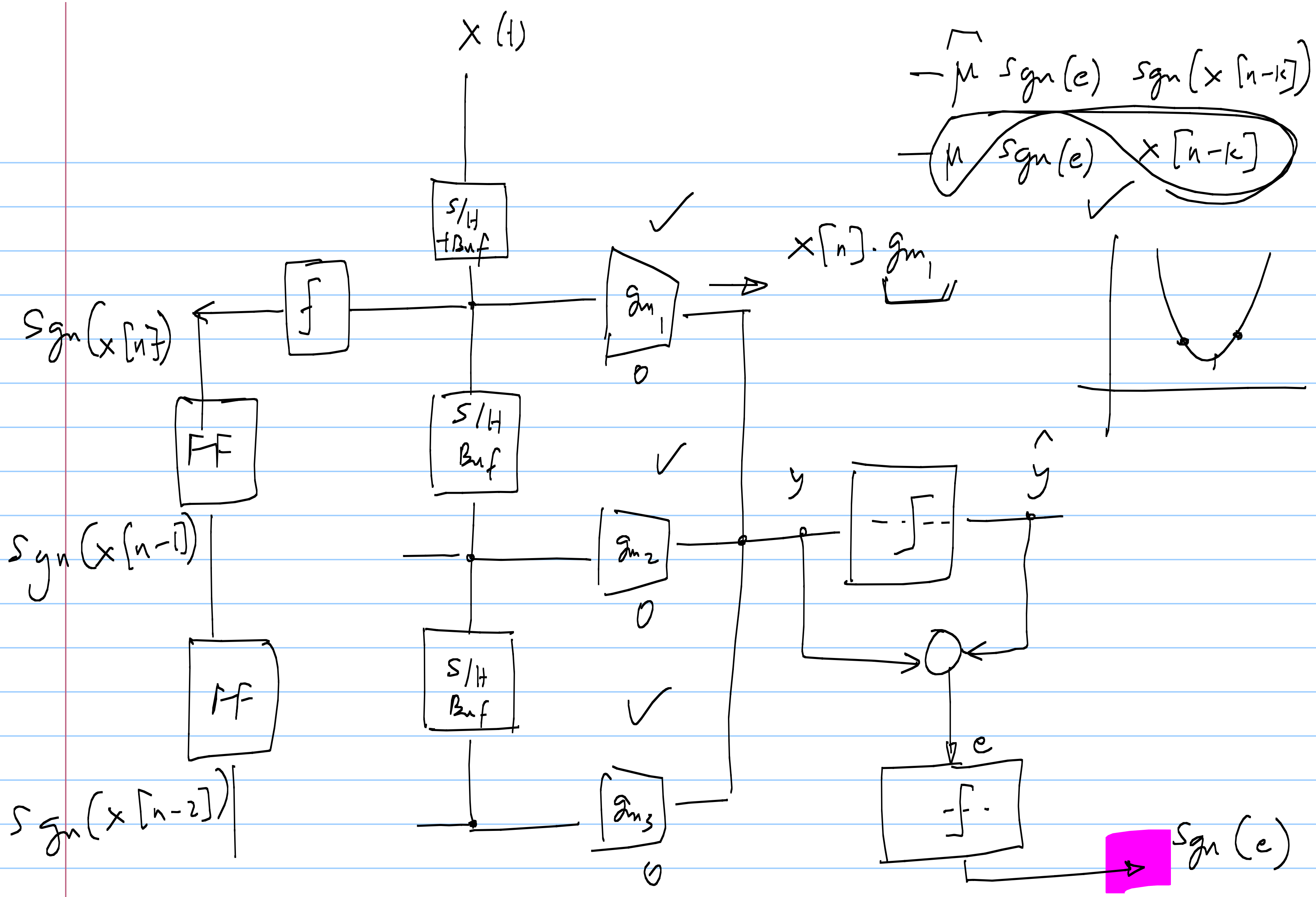



S/H
Buf
S/H
Buf
S/H
Buf
f
f
f
sgn(x[n])
sgn(x[n-1])
sgn(x[n-2])
+1
y
-1
f
f
f
sgn(y-1)
ŷ
sgn(y+1)

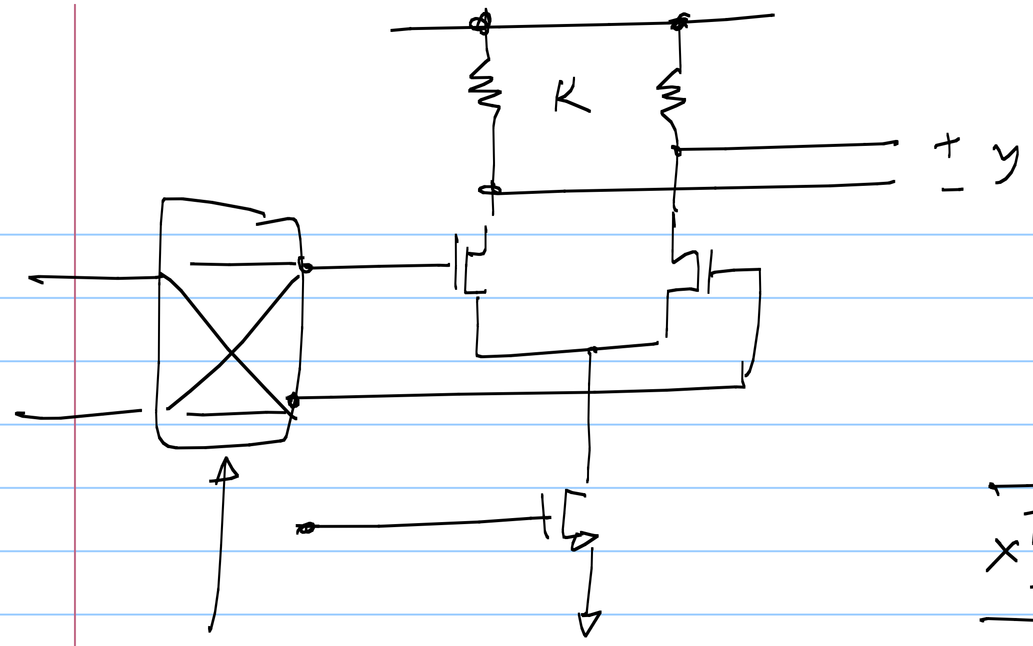
$-\mu \,\mathrm{sgn}(e)\, \mathrm{sgn}(x[n-k])$

$-\mu \,\mathrm{sgn}(e)\, x[n-k]$

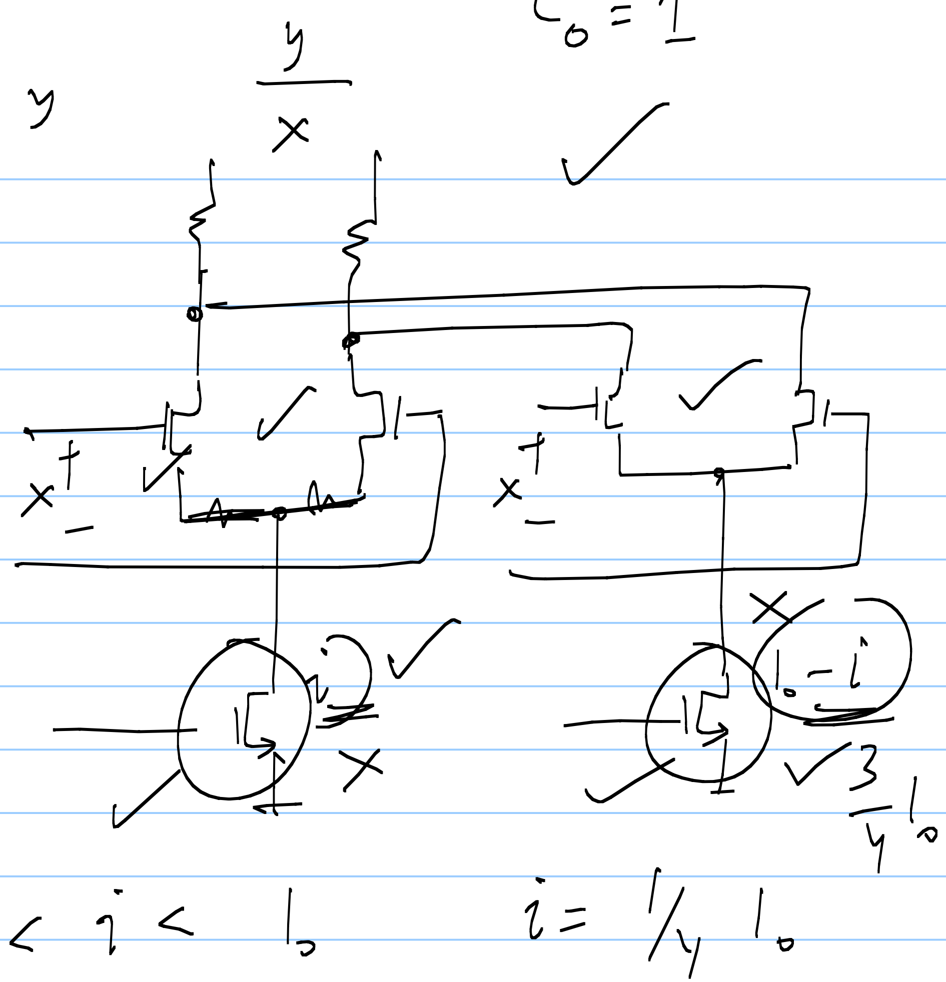


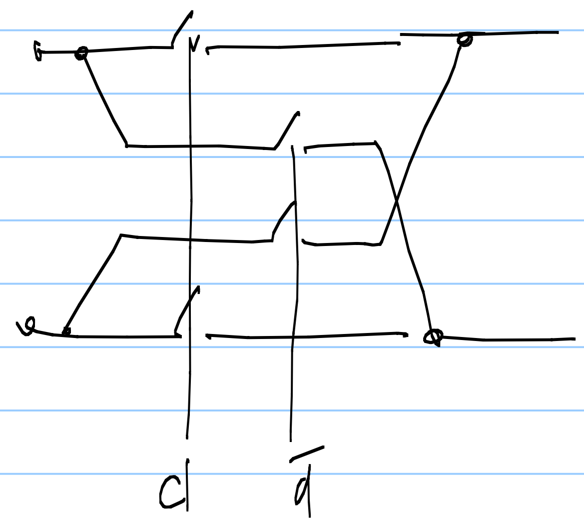


x(t)
S/H +Buf
S/H Buf
S/H Buf
FF
FF
sgn(x[n])
sgn(x[n-1])
sgn(x[n-2])
gm1
gm2
gm3
0
0
0
x[n]·gm1
y
ŷ
e
sgn(e)
−μ sgn(e) sgn(x[n-k])
−μ sgn(e) x[n-k]



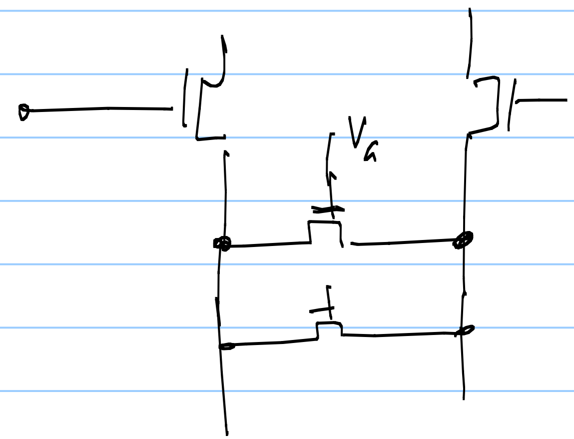

$C_0 = 1$




$0 < i < I_0$ $\quad i = \frac{1}{y} I_0$

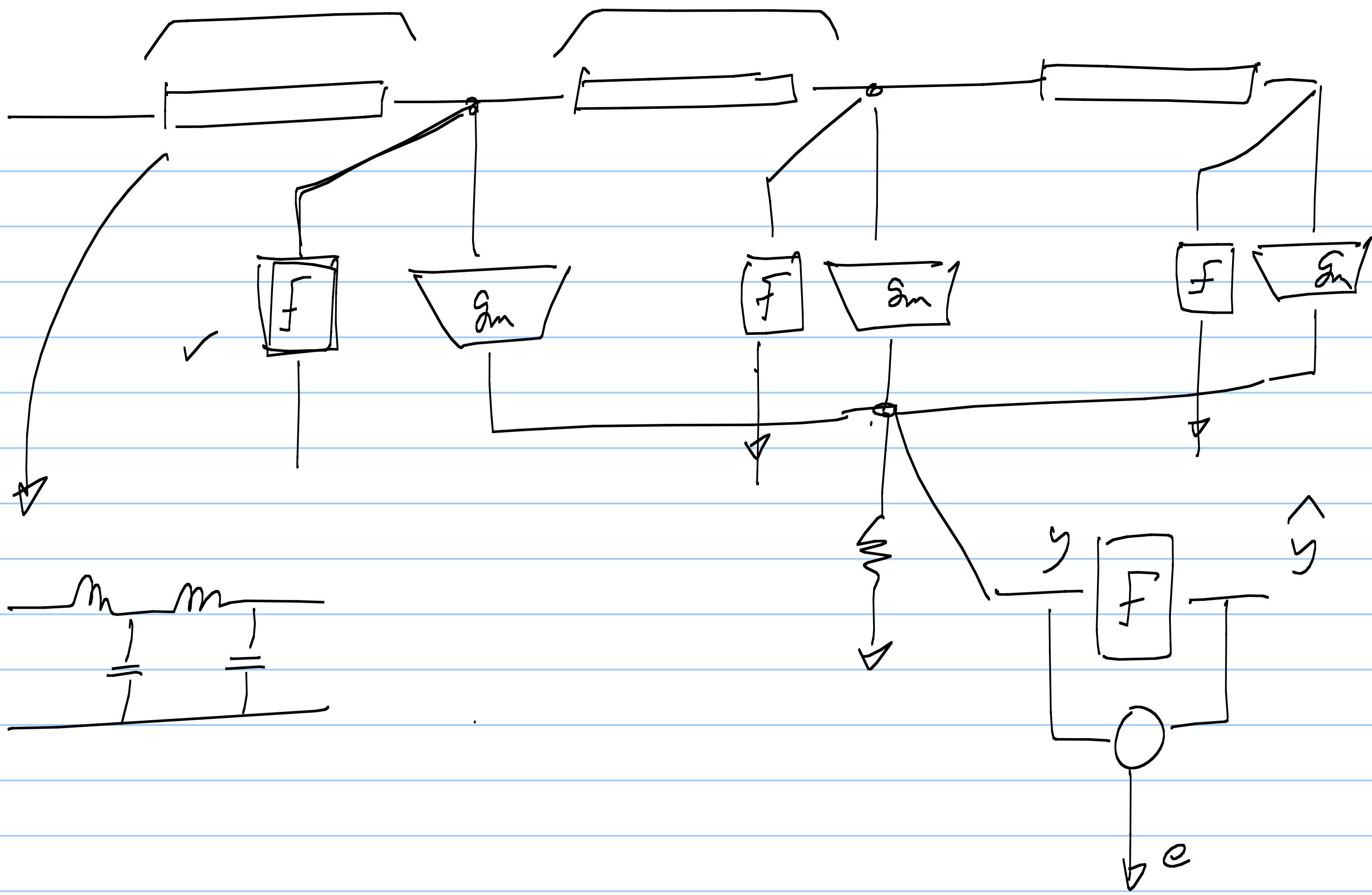
$-0.5 : 0.05 : 0.5$




$g_m$ variation

by degeneration

which is variable



f
gm
f
gm
f
gm
y
f
ŷ
e