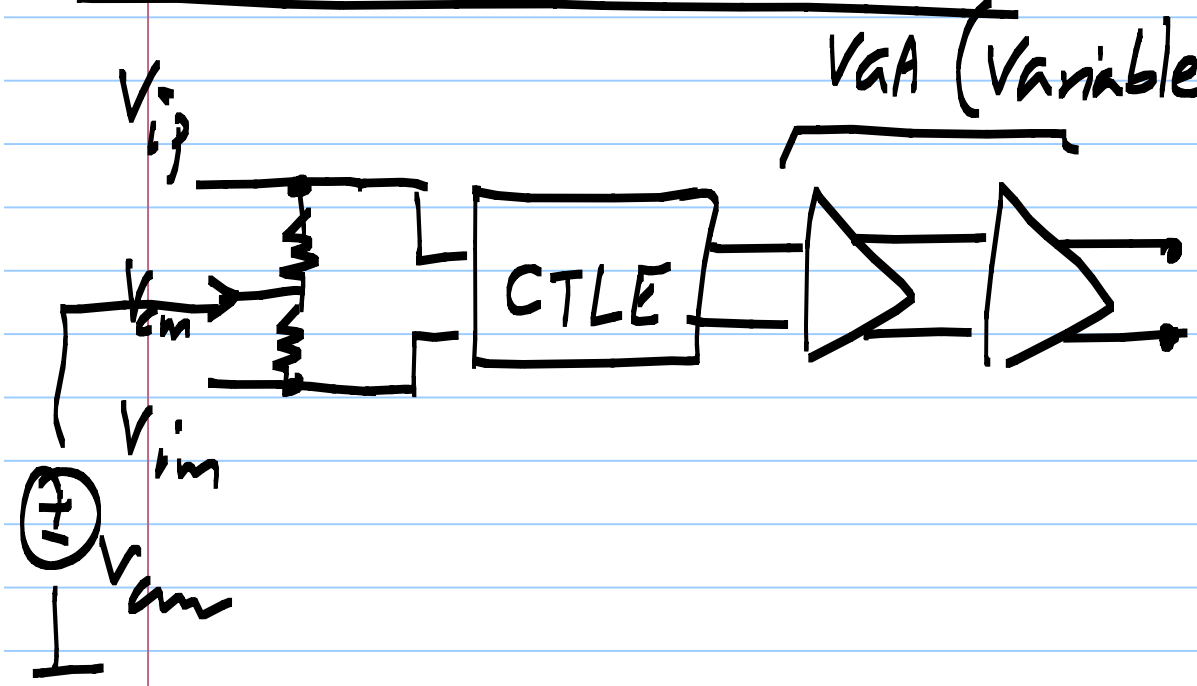
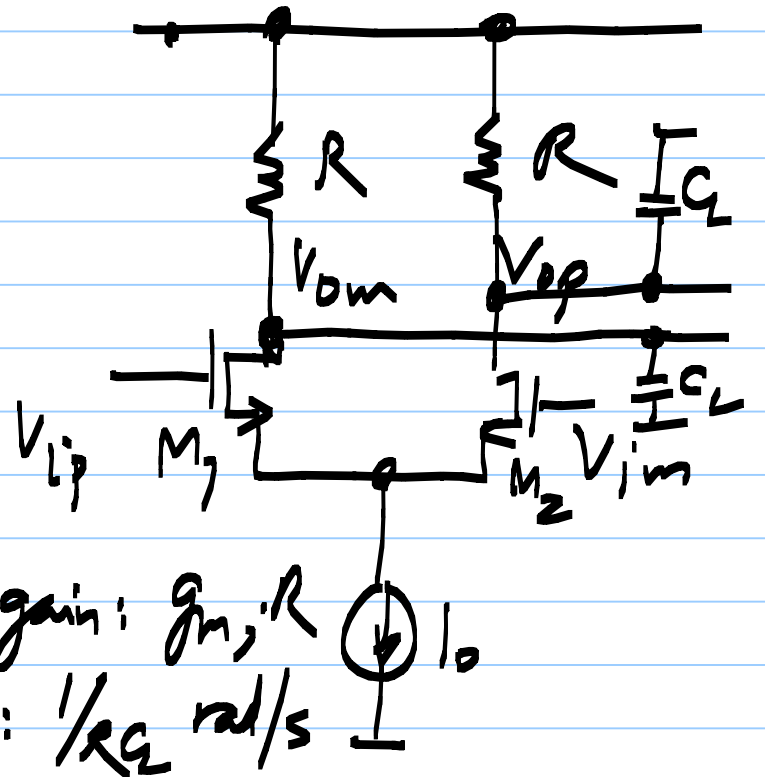
Continuous-time linear (CTLE) equalizer

$$H_{eq}(s) = \frac{1 + s/z_1}{(1 + s/p_1)(1 + s/p_2)}$$

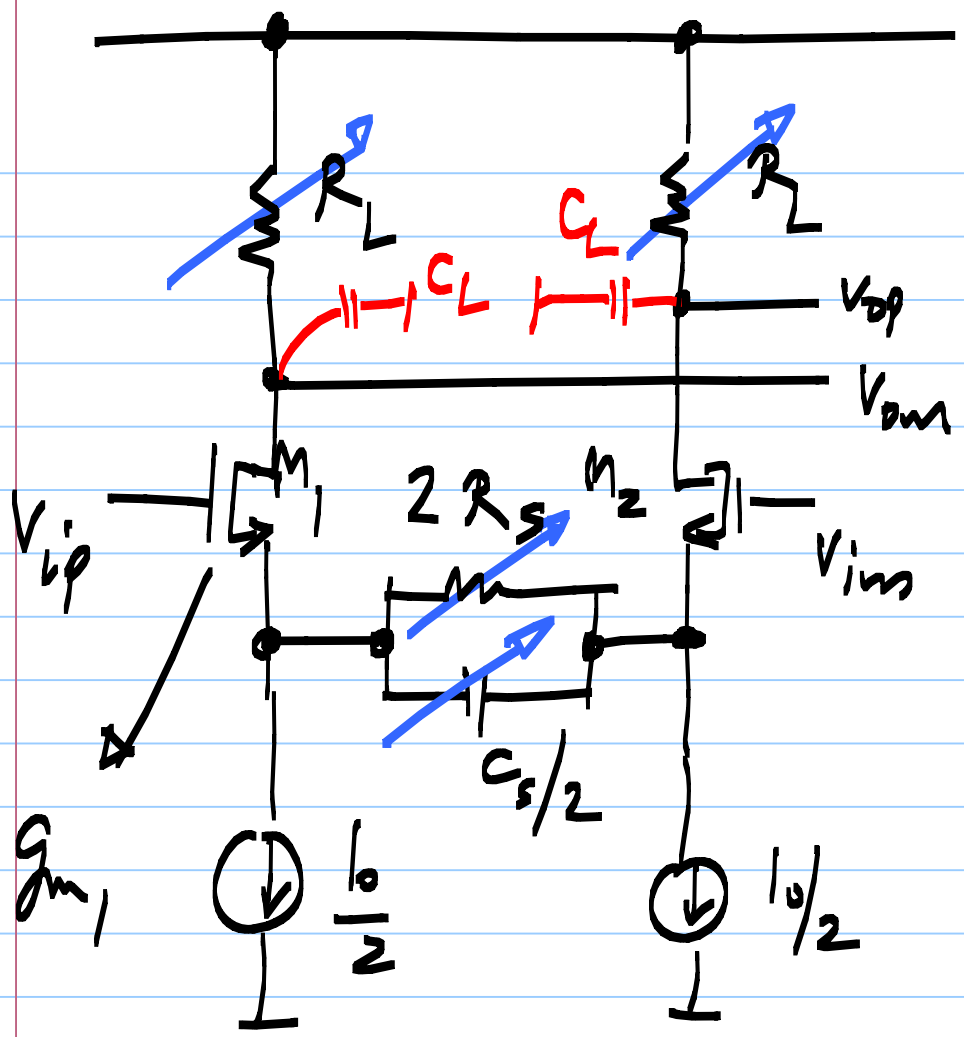
In the Rx, before sampling

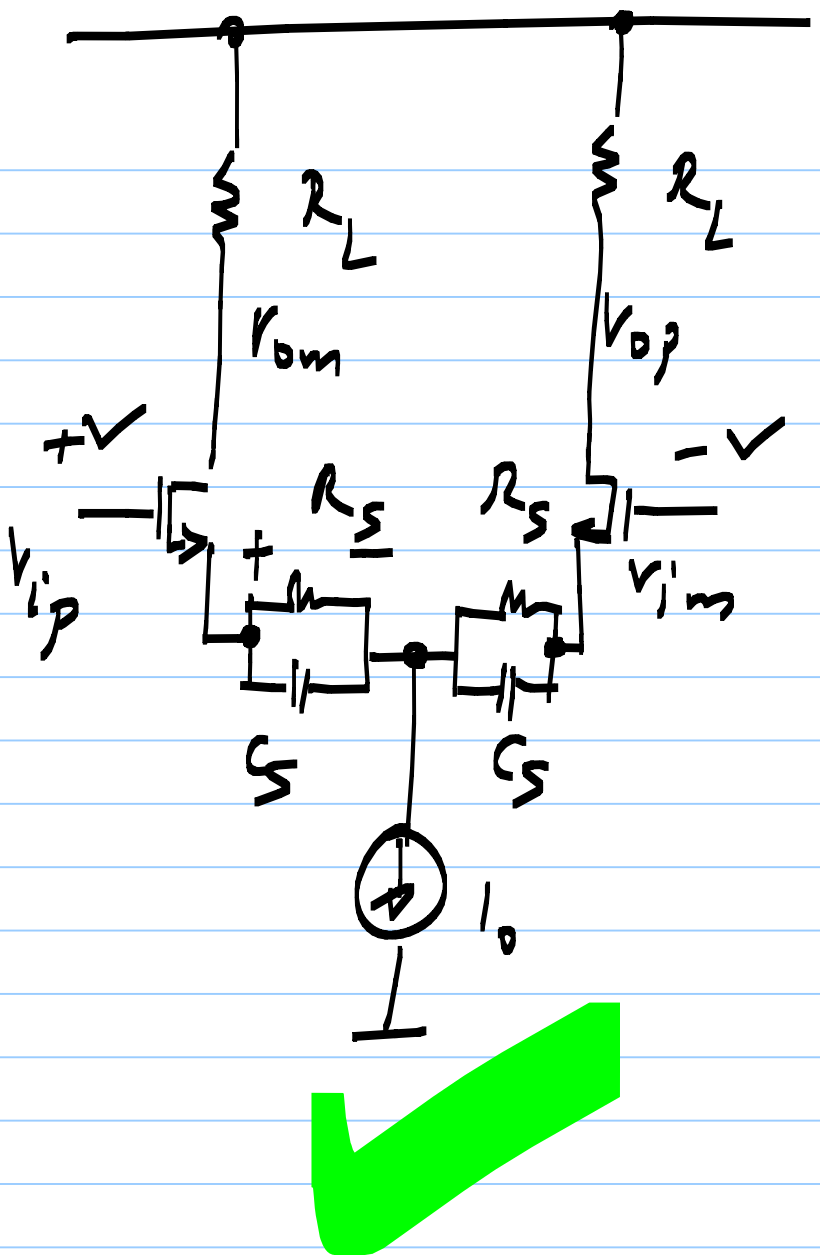


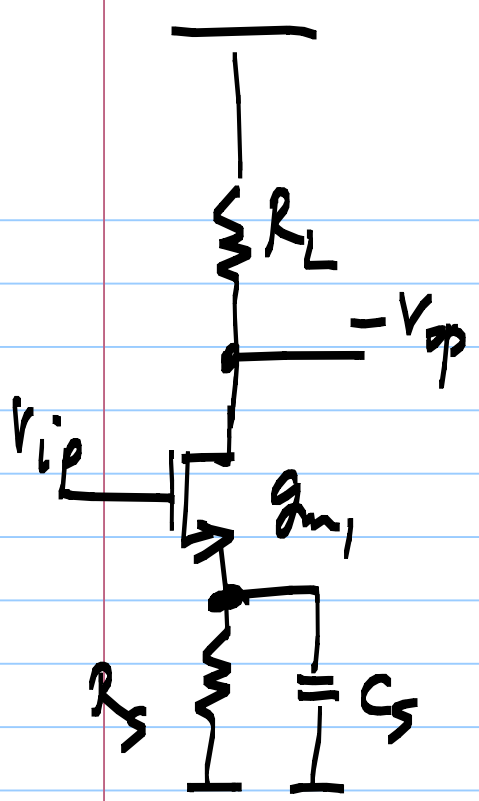


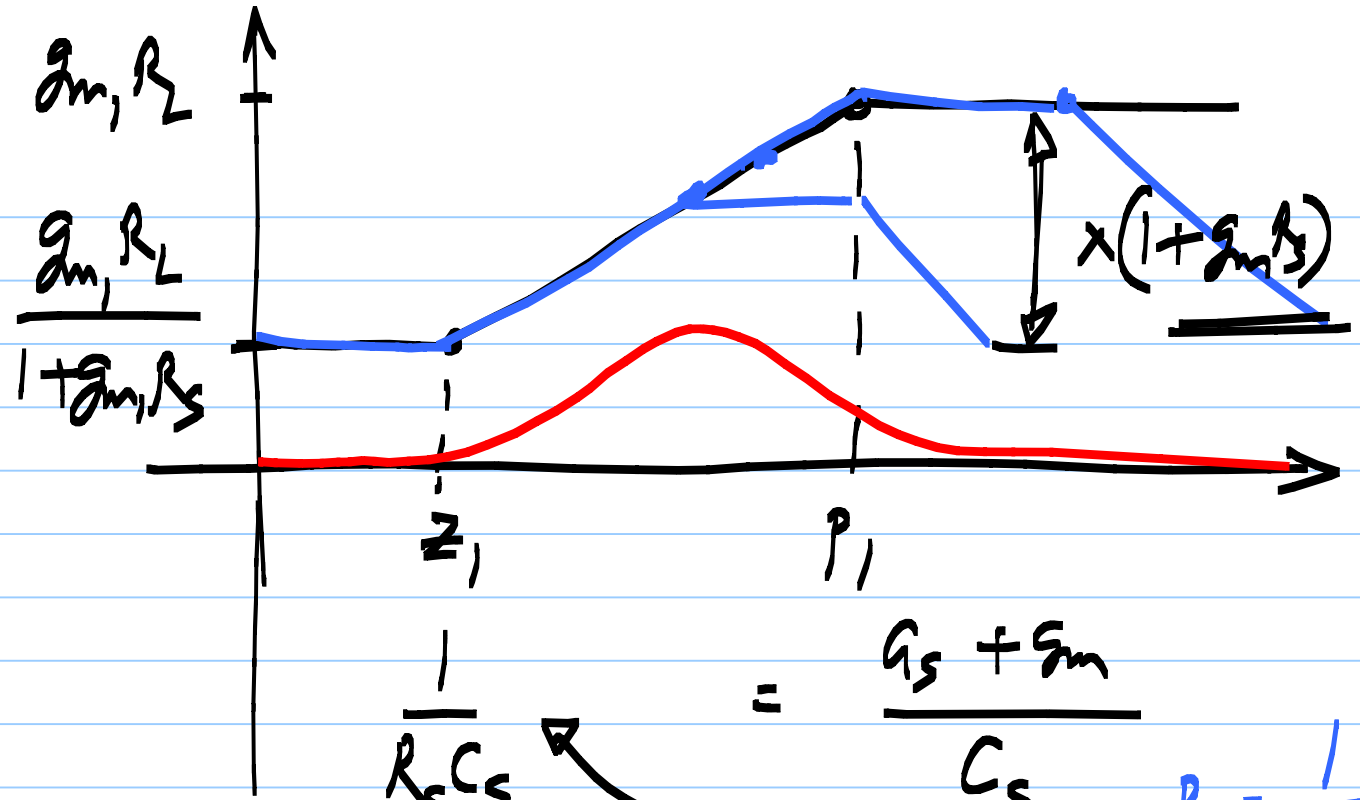
dc gain: $g_m R$

BW: $1/RC$ rad/s


R_L
C_L
C_L
R_L
V_{op}
V_{om}
V_{ip}
M_1
$2R_S$
M_2
V_{im}
$C_S/2$
g_{m_1}
$I_0/2$
$I_0/2$


R_L
R_L
V_{om}
V_{op}
$+V$
$-V$
V_{ip}
R_S
R_S
V_{im}
C_S
C_S
I_0

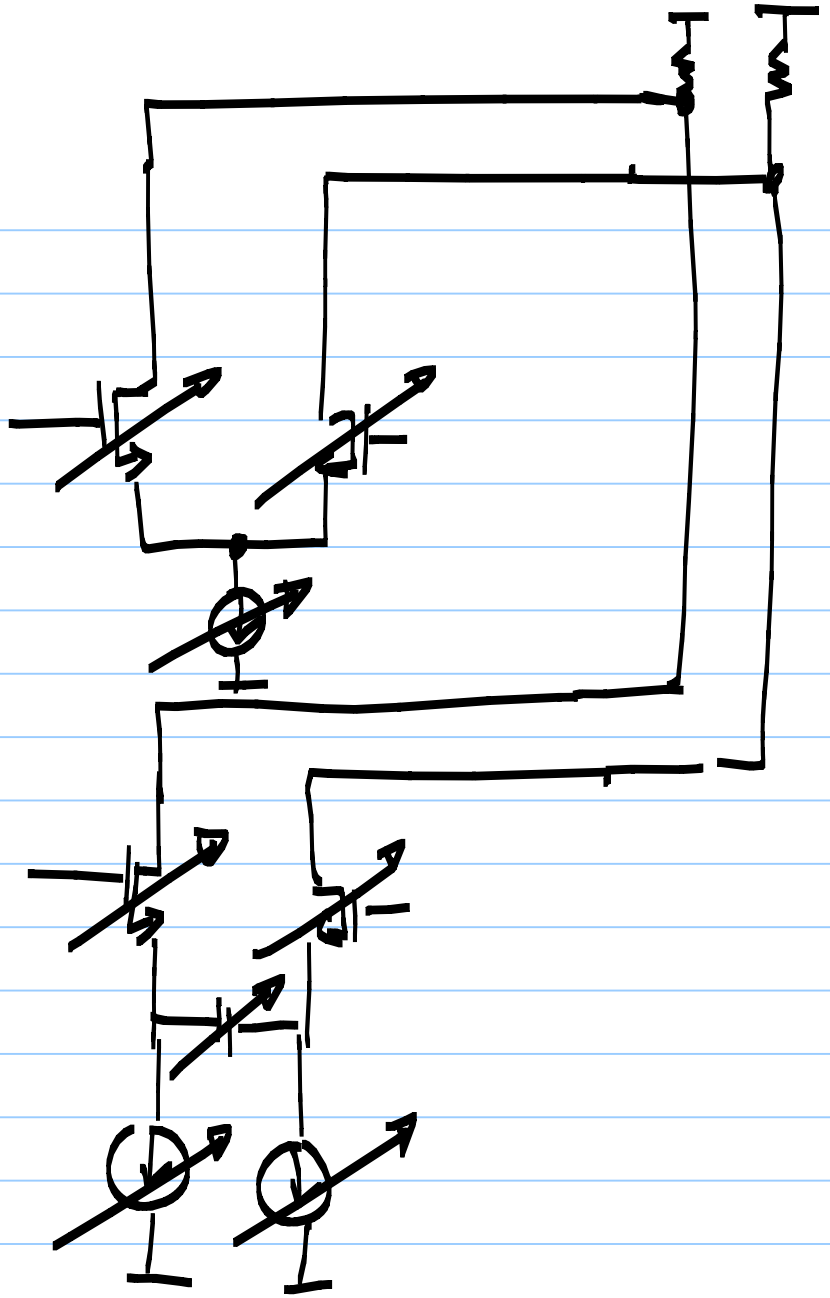




$$\frac{1}{R_S C_S} = \frac{G_S + g_m}{C_S}$$

$p_2 = \frac{1}{R_L C_L}$

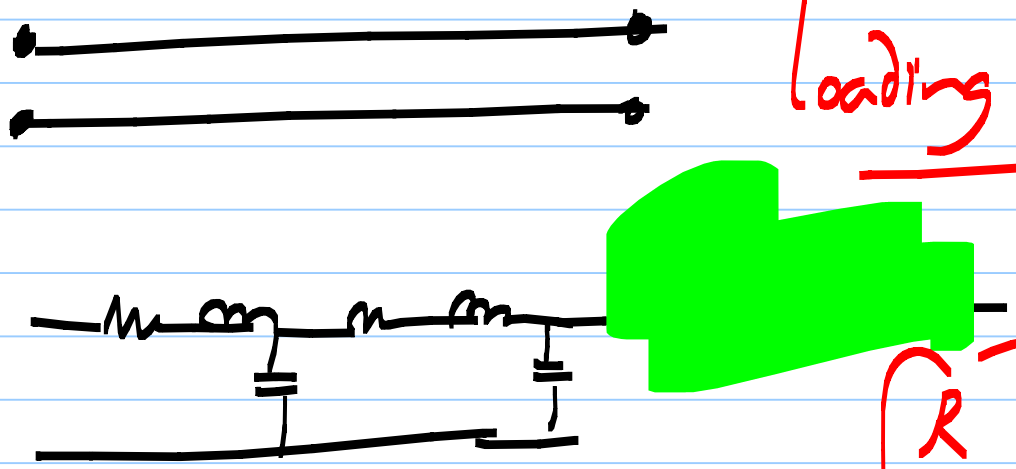
$$H(s) = \frac{g_{m_1}R_L}{1+g_{m_1}R_S} \cdot \frac{1+s/z_1}{1+s/p_1} \cdot \frac{1}{1+sC_LR_L}$$



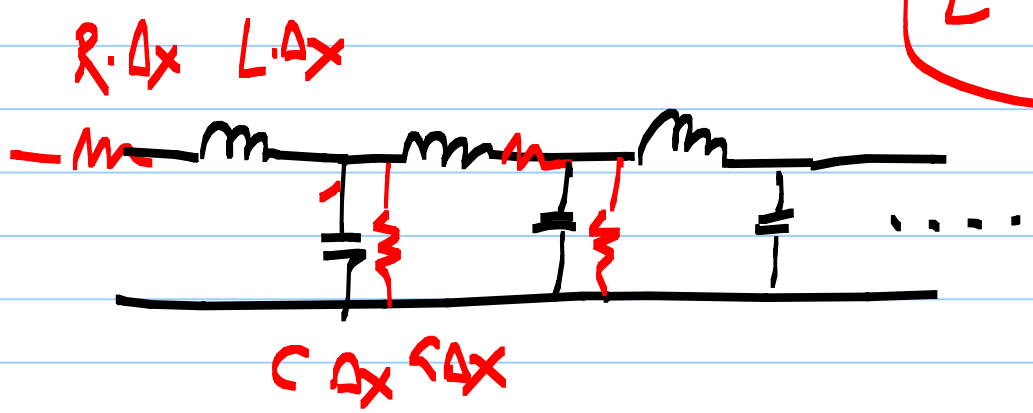
Heaviside

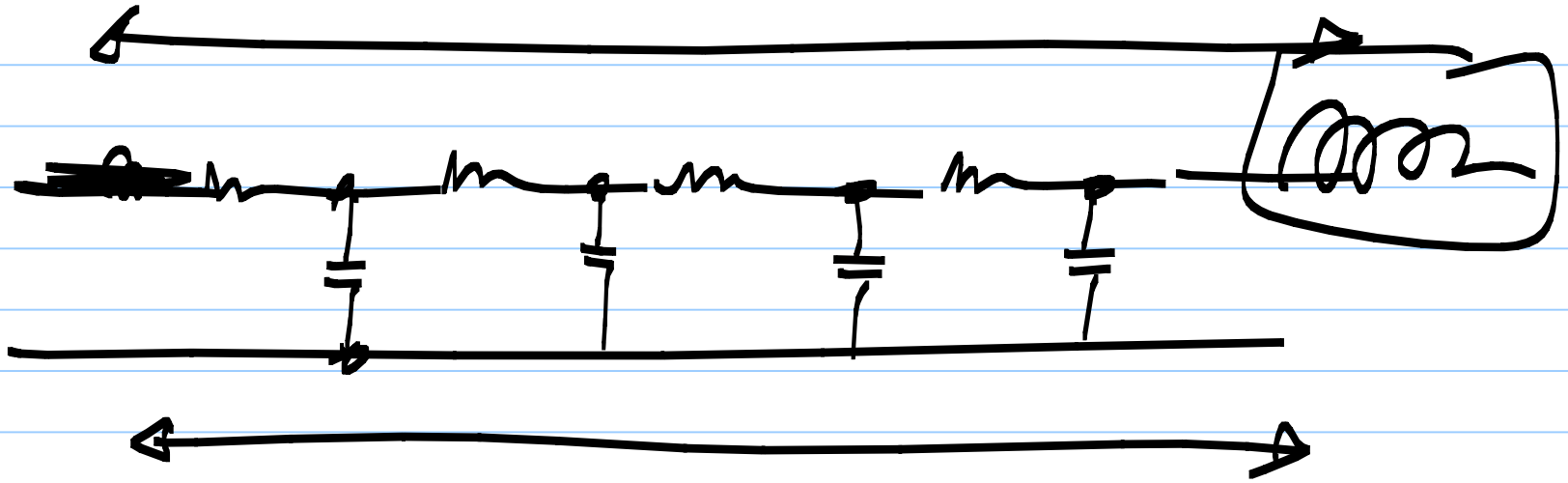
Pupin

loading coil



$$\frac{R}{L} = \frac{G}{C}$$

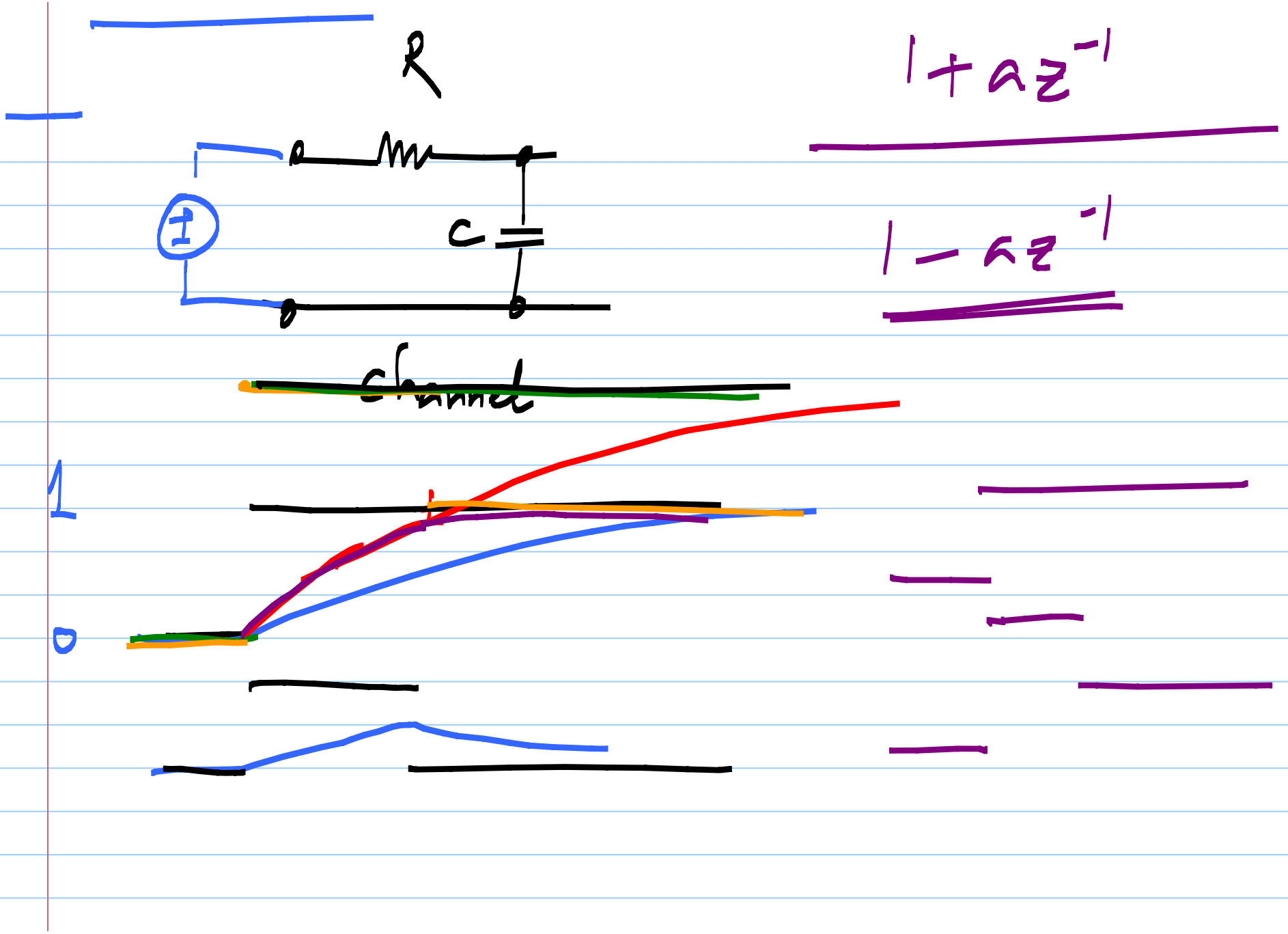


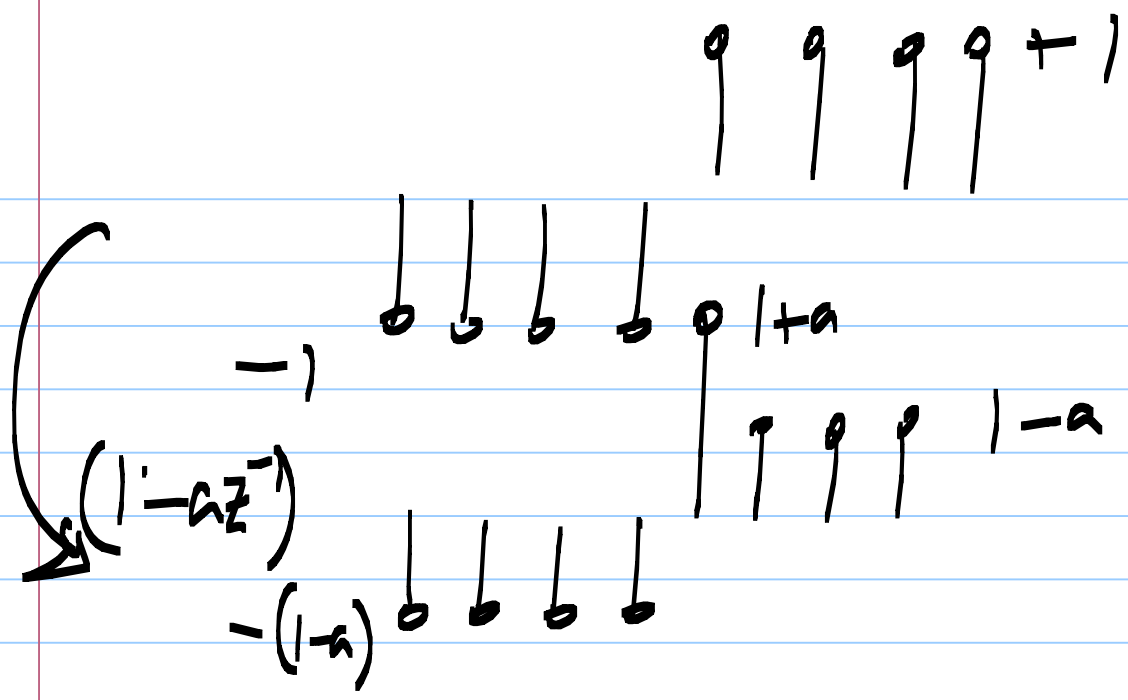


l

$$T \sim l^2$$

$$\frac{T}{l}$$


R
C
channel
1
0
$1+az^{-1}$
$1-az^{-1}$


+1
1+a
−1
1−a
$(1-az^{-1})$
$-(1-a)$