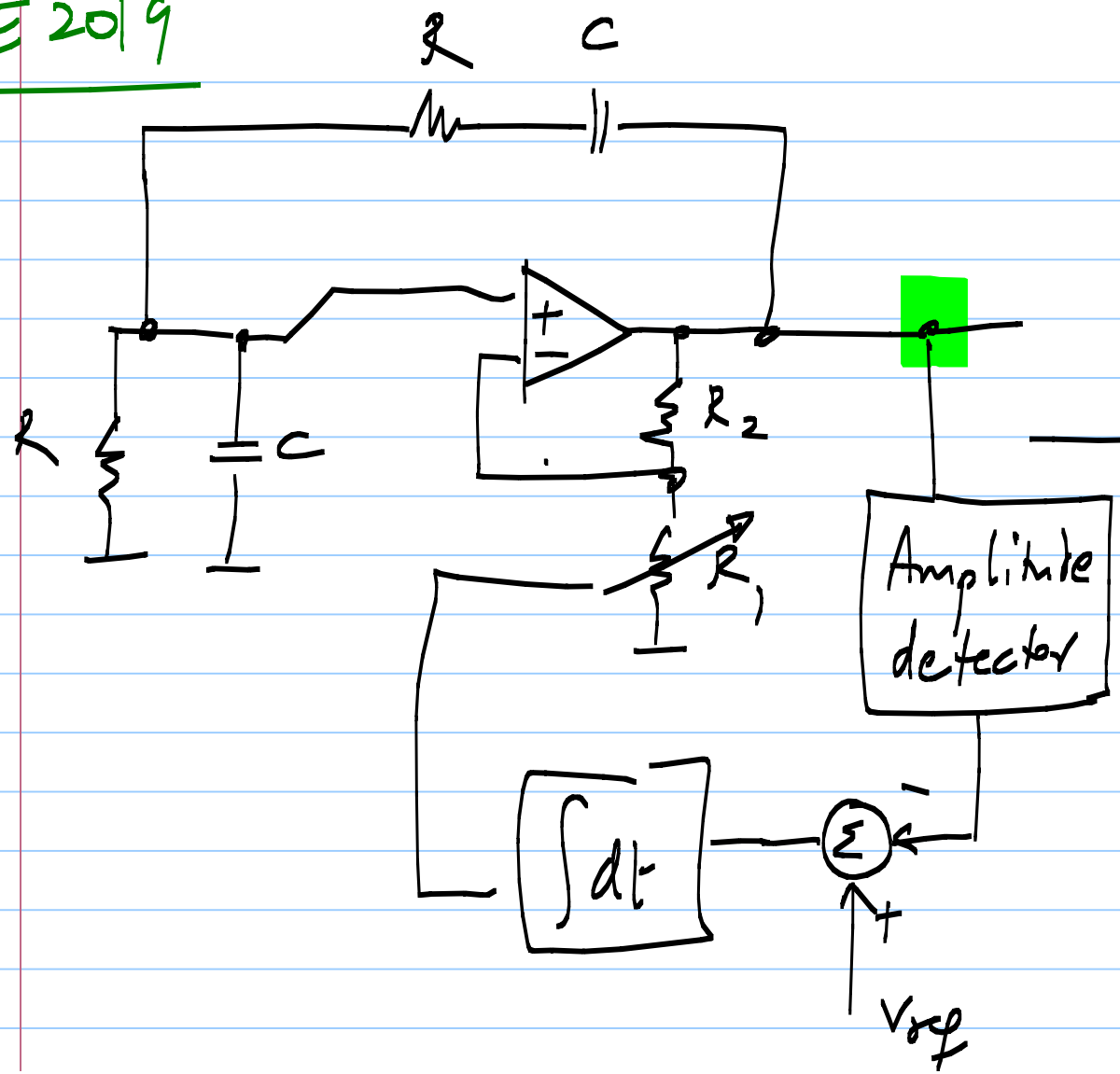
EE 2019

11/4/2017

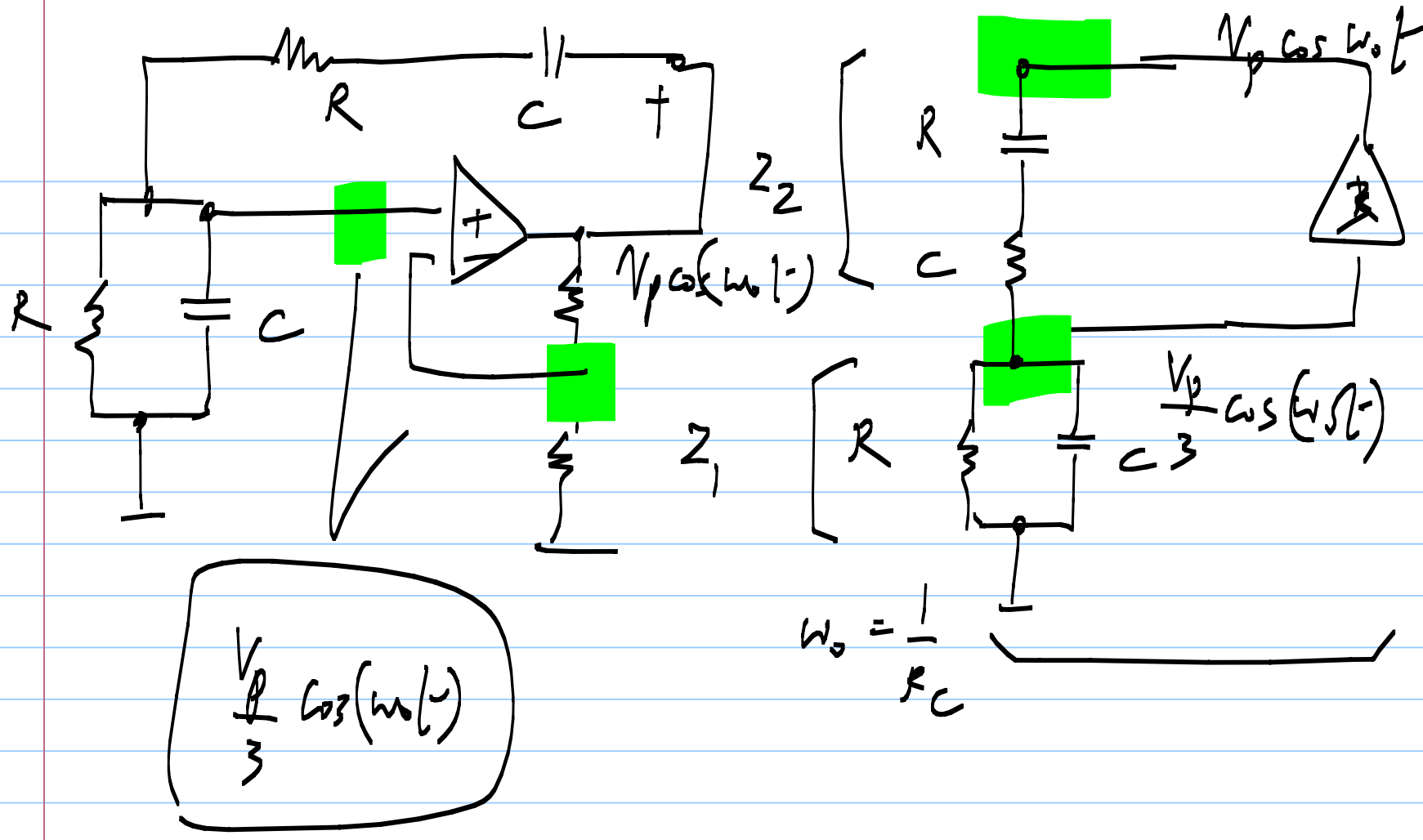


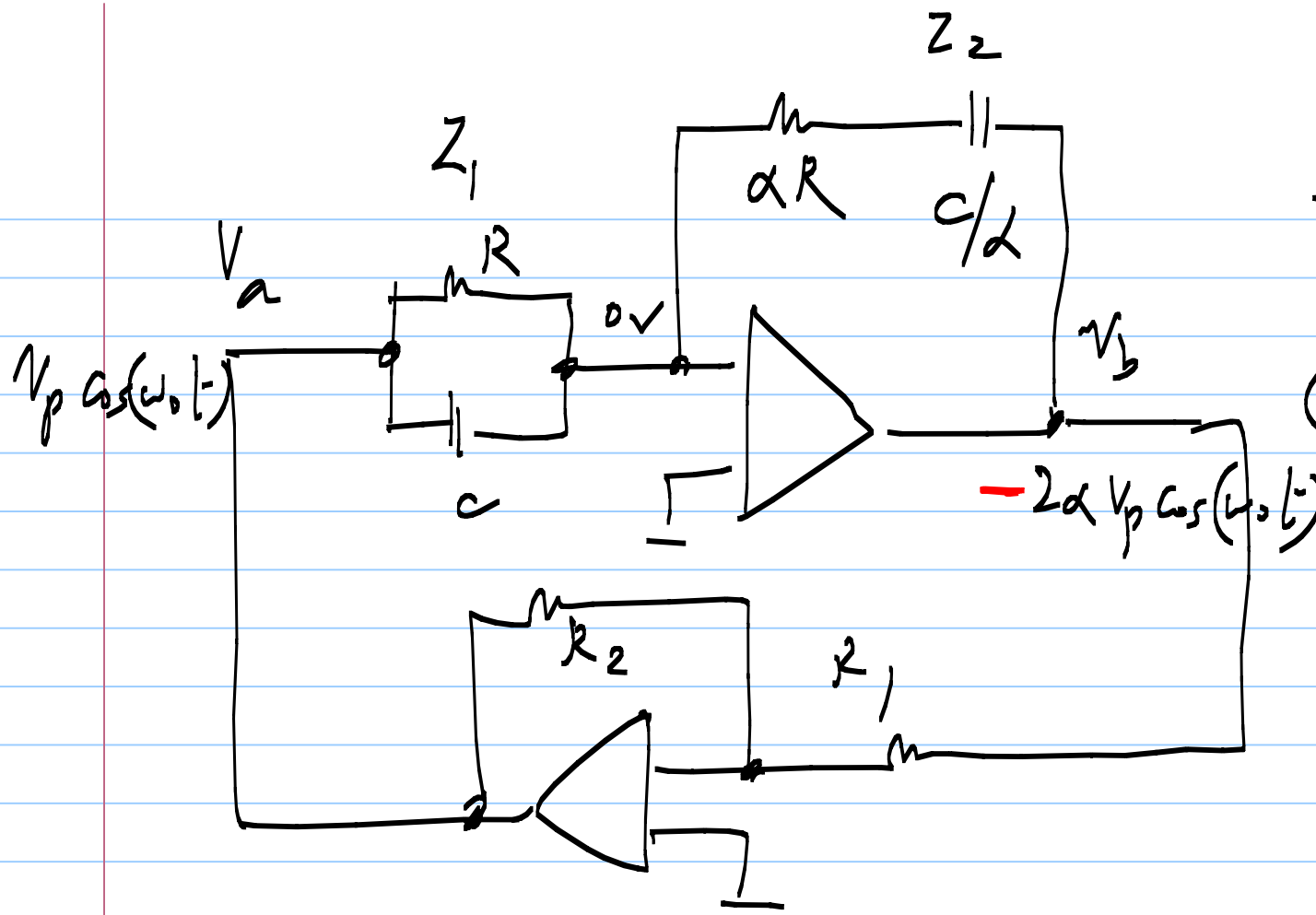
$\frac{R_2}{R_1} \geq 2$ for oscillation

Oscillate @

$\omega_0 = 1/RC$,

amplitude V_{ref}

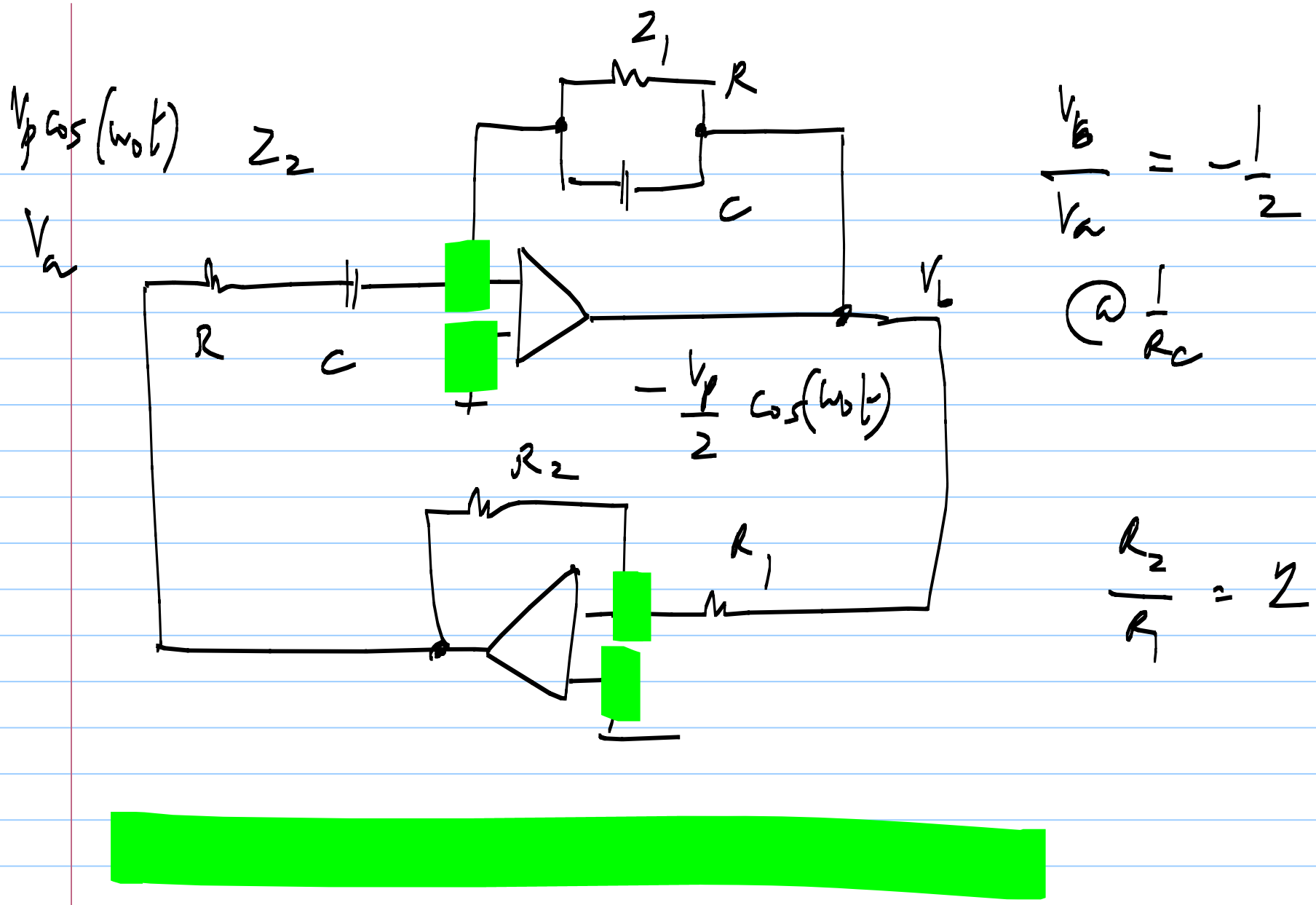

R
C
R
C
Z_2
$V_p \cos(\omega_0 t)$
Z_1
R
C
$V_p \cos \omega_0 t$
R
C
$\frac{V_p}{3}\cos(\omega_0 t)$
$\frac{V_p}{3}\cos(\omega_0 t)$
$\omega_0 = \frac{1}{RC}$



$$\frac{V_b}{V_a} = -\frac{Z_2}{Z_1}$$

@ $\frac{1}{RC} = -2\alpha$

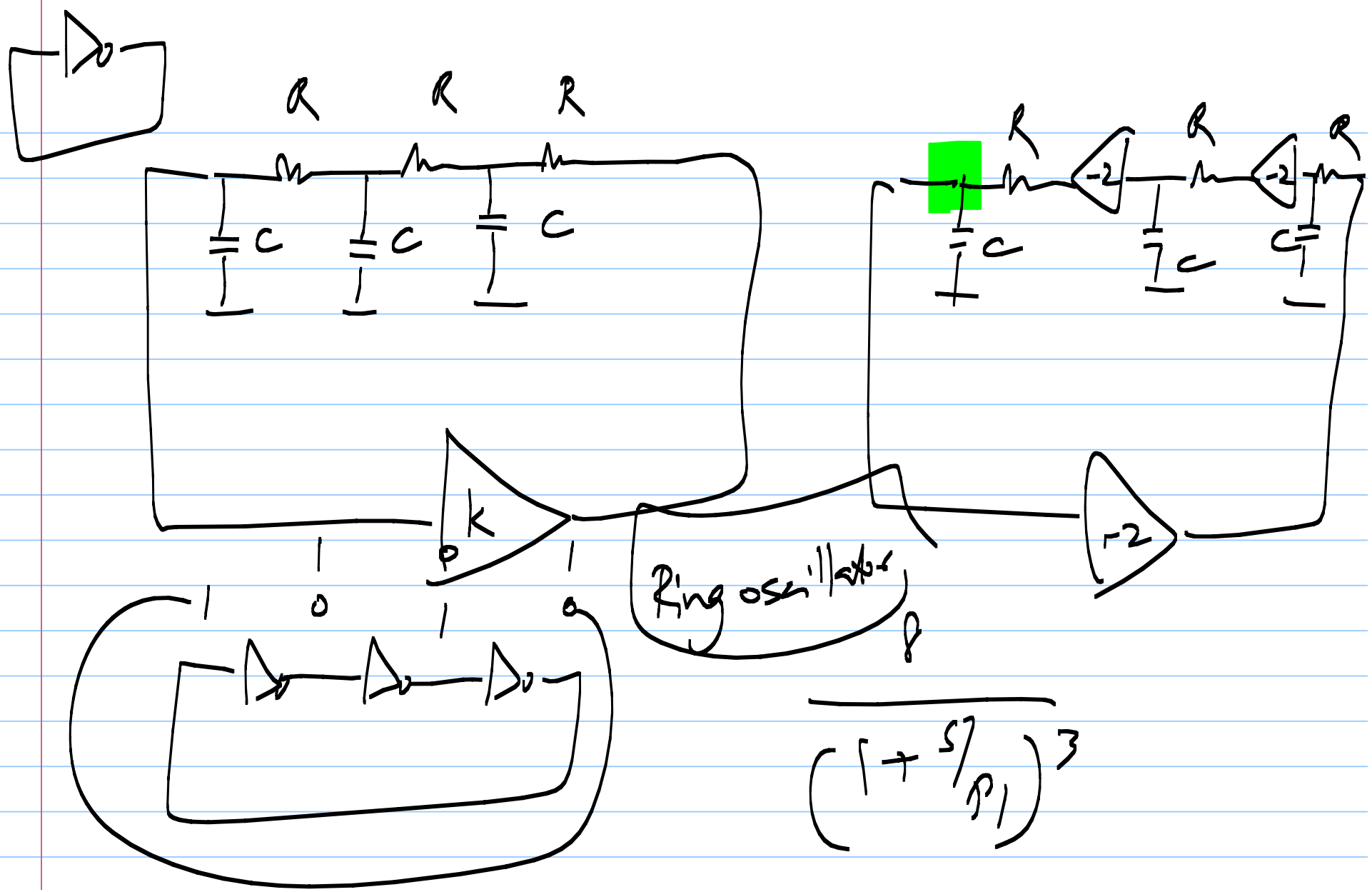
$$\frac{R_2}{R_1} = \frac{1}{2\alpha}$$



$$\frac{V_b}{V_a} = -\frac{1}{2}$$

@ $\frac{1}{RC}$

$$\frac{R_2}{R_1} = 2$$


R
R
R
C
C
C
k
1
0
1
0
-2
-2
-2
Ring oscillator
8
$\frac{}{(1+s/p_1)^3}$

Oscillators:

LC: Very "good" periodicity

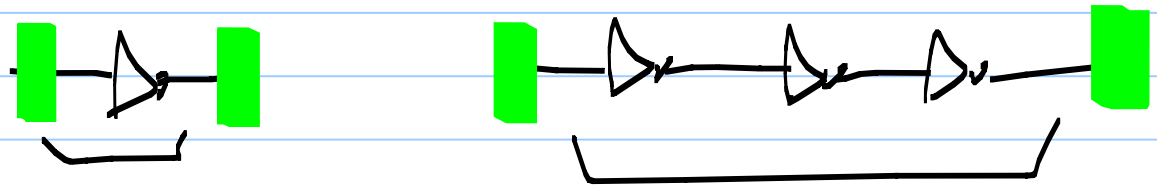
Better periodicity

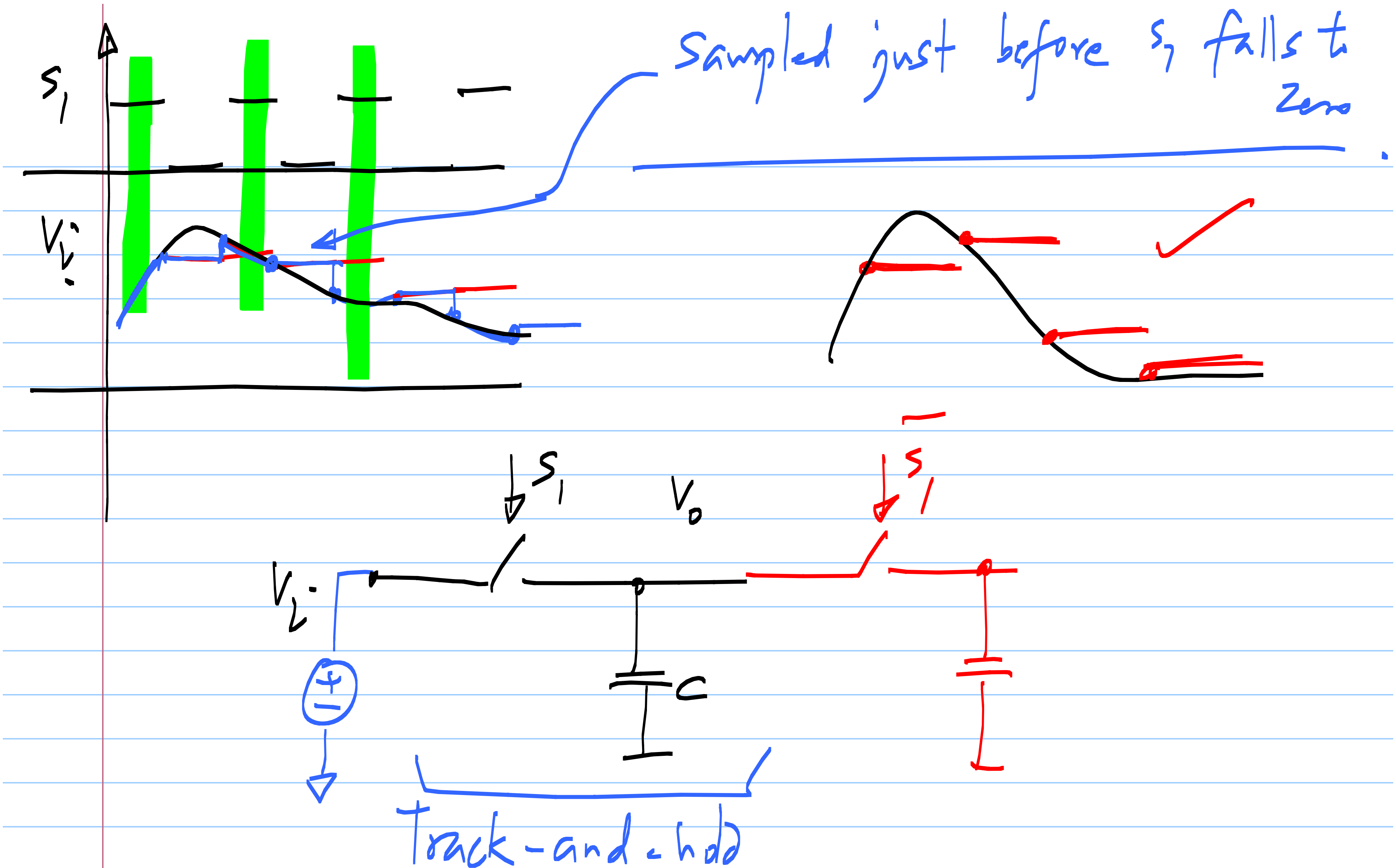
Higher max frequency

Ring oscillators:

Harmonic oscillators: < Double integrator (opamp)
Wien Bridge

Relaxation oscillators: Schmitt trigger osc.




Sampled just before s_1 falls to zero
s_1
V_i
S_1
V_o
V_i
C
$\bar{S}_1$
Track-and-hold