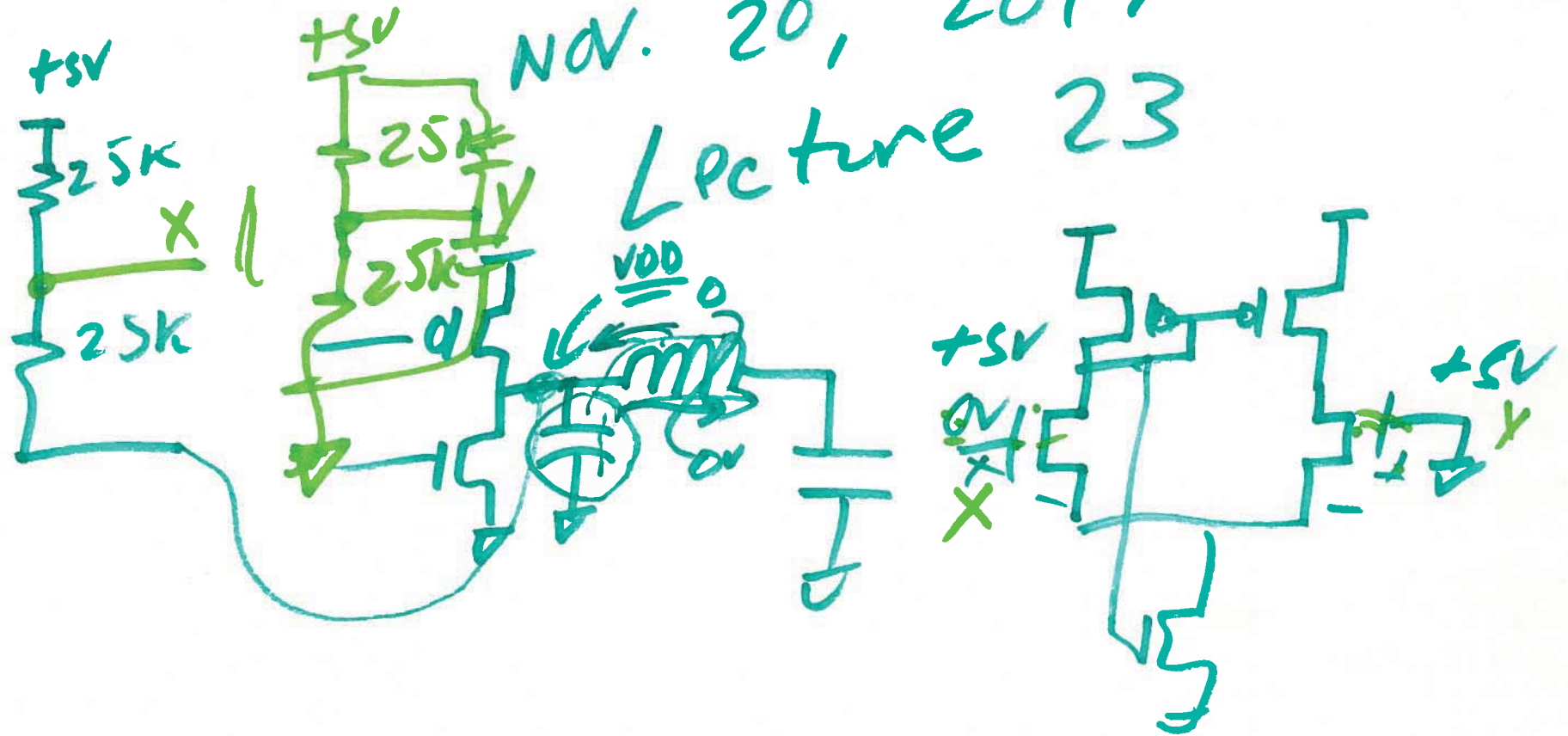


EE 421 / ECG 621

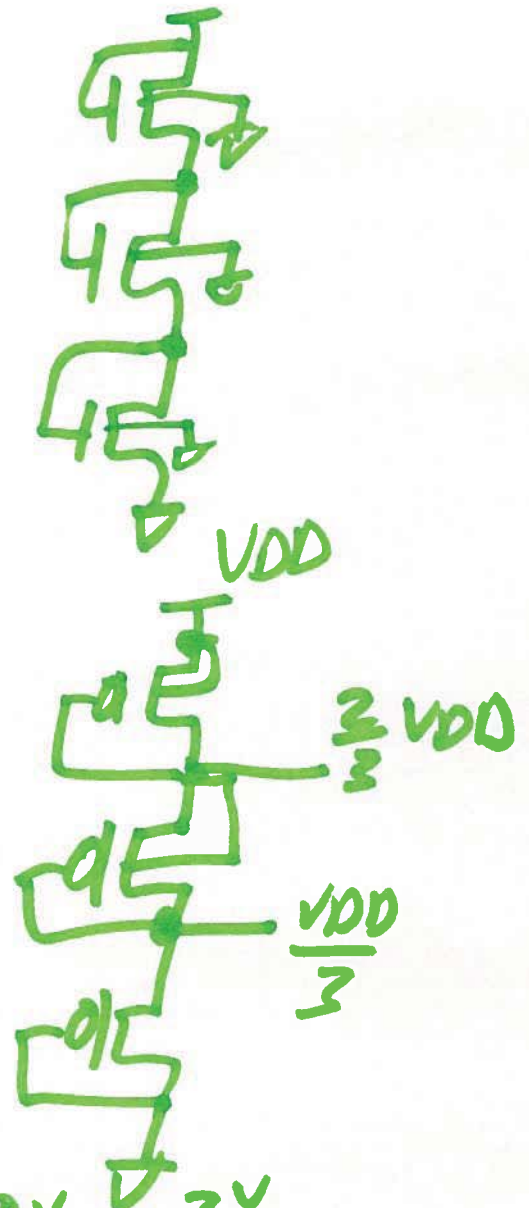
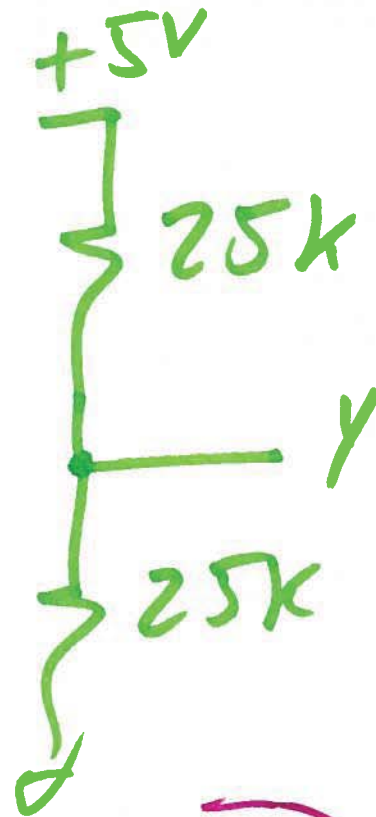
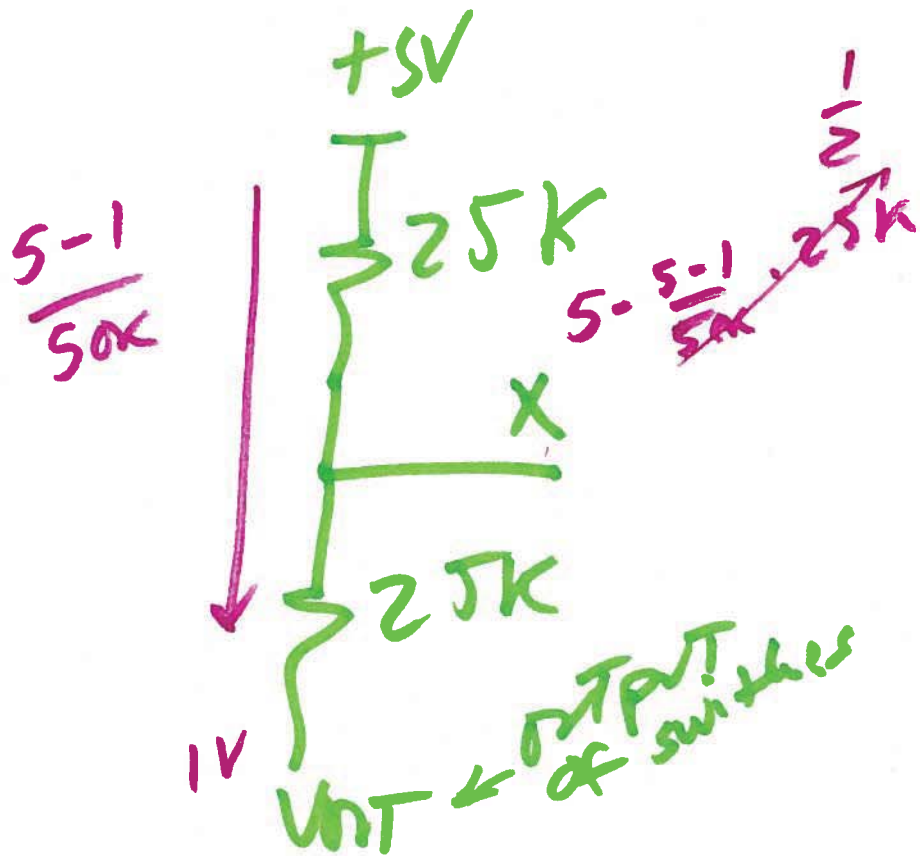
Digital IC Design

Nov. 20, 2017

Lecture 23



1)



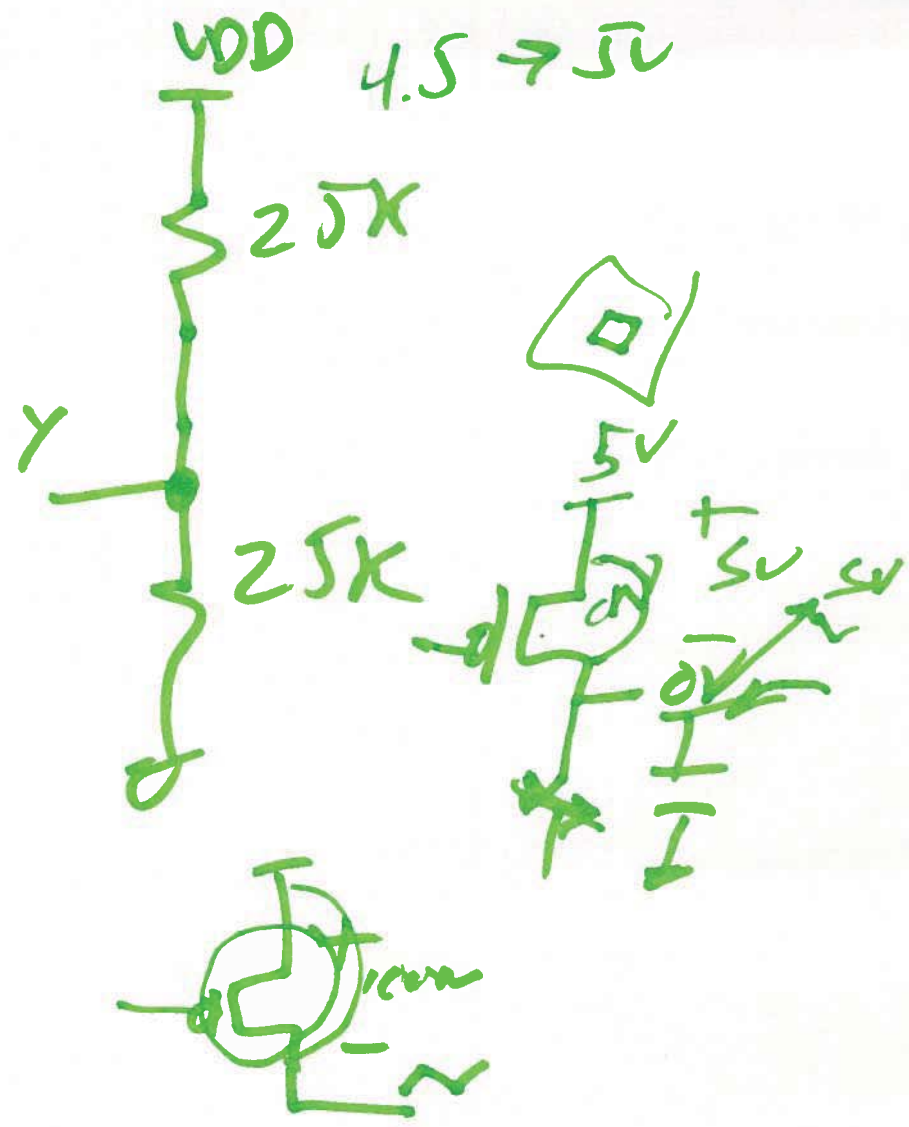
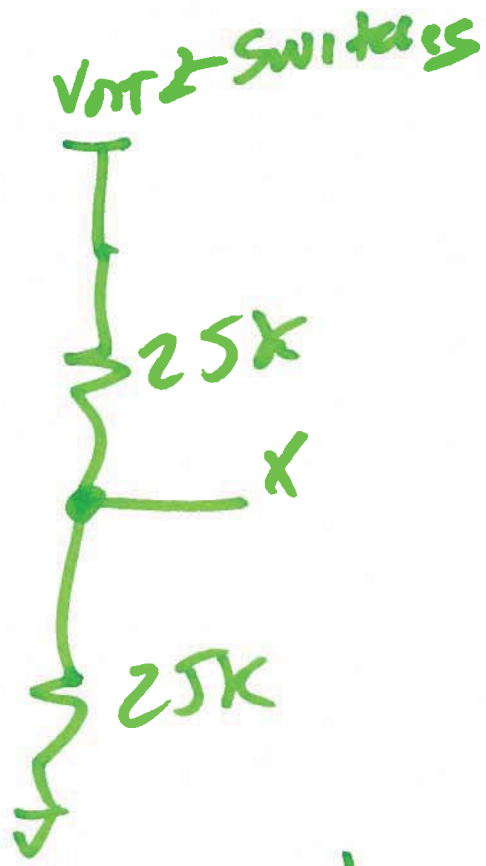
$14A$
 $50fF$
 $V_{INT} > 0$
 $V_{INT} = 0$
 $V_{INT} < 0$

$x > y$
 $x = y$
 $x < y$

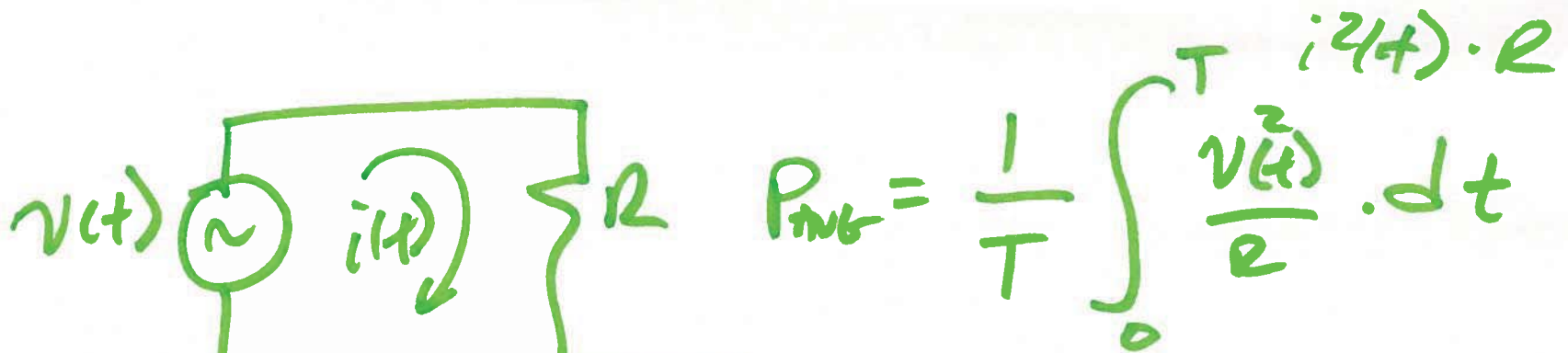
$\frac{1}{50} \cdot 10^9$

$\frac{.02V}{NS}$

$\frac{20V}{45} = \frac{2V}{100NS}$



3)



$$P_{avg} = \frac{1}{T} \int_0^T \frac{v^2(t)}{R} \cdot dt$$

$$\% \text{ eff} = \frac{v_{avg}^2 / R}{v_{oc} \cdot I_{avg}}$$

$$P_{avg} = \frac{v_{rms}^2}{R} = I_{rms}^2 \cdot R$$

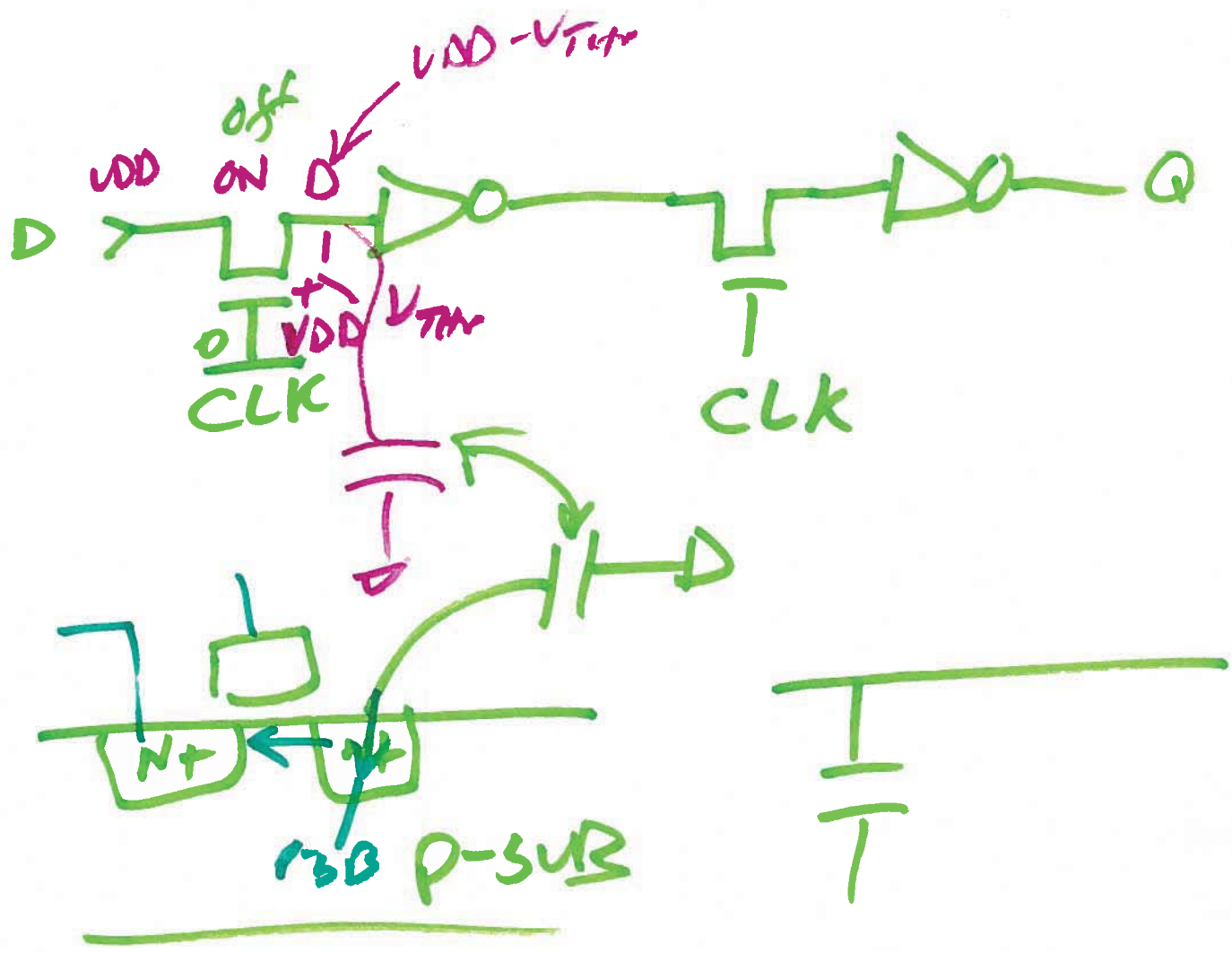
$$P_{avg} = \frac{1}{T} \int_0^T v_{oc} \cdot i(t) \cdot dt$$

$$= v_{oc} \cdot \frac{1}{T} \int_0^T i(t) \cdot dt$$

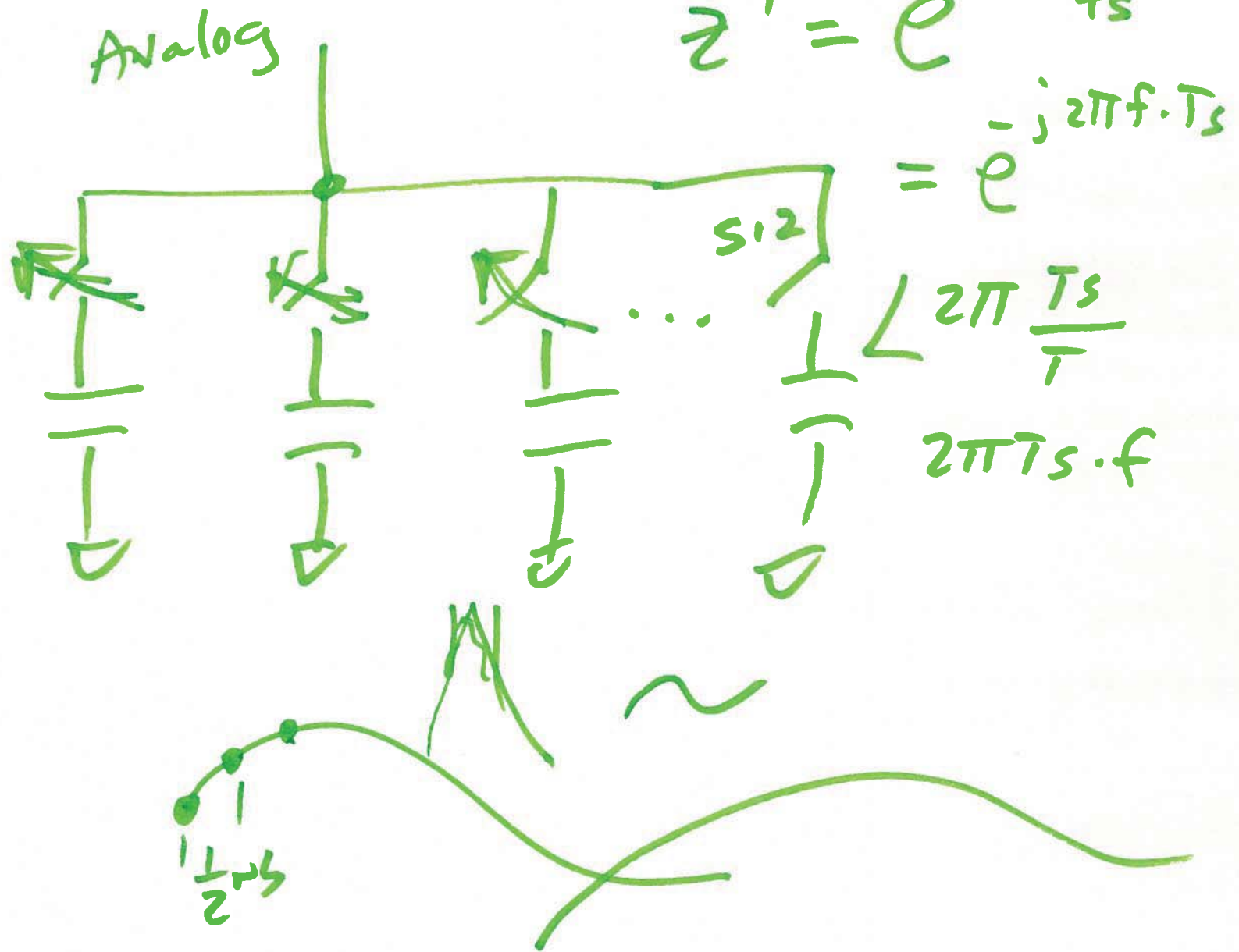
I_{avg}

4)

DYNAMIC CIRCUITS



5)



6)