MARCH 13 Lecture 9 ! Extra !

ECE 615 CMOS Mixed Signal Circuit Design

Discrete Analog Integrators (DAIs)

see Ch.

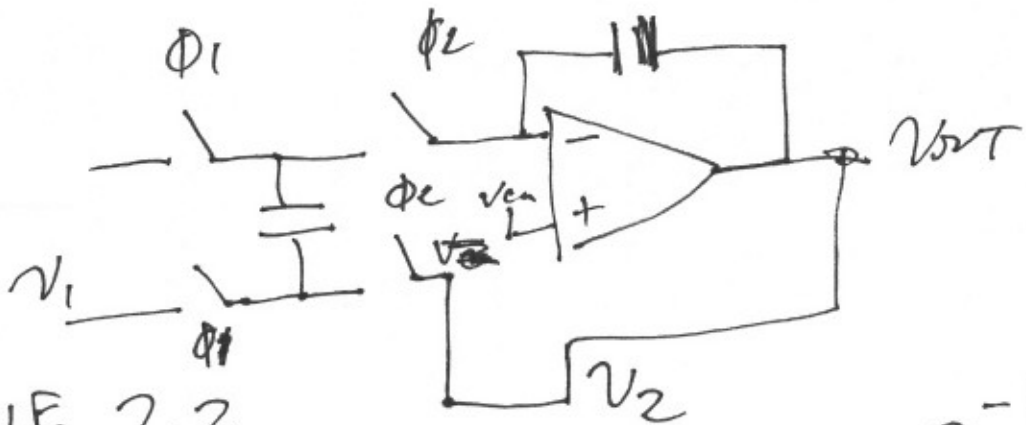


TABLE 2.2

pages 66-67

$$\frac{V_{OUT}}{V_1 - V_{OUT}} = \frac{C_I}{C_F} \cdot \frac{z^{-1}}{1 - z^{-1}}$$

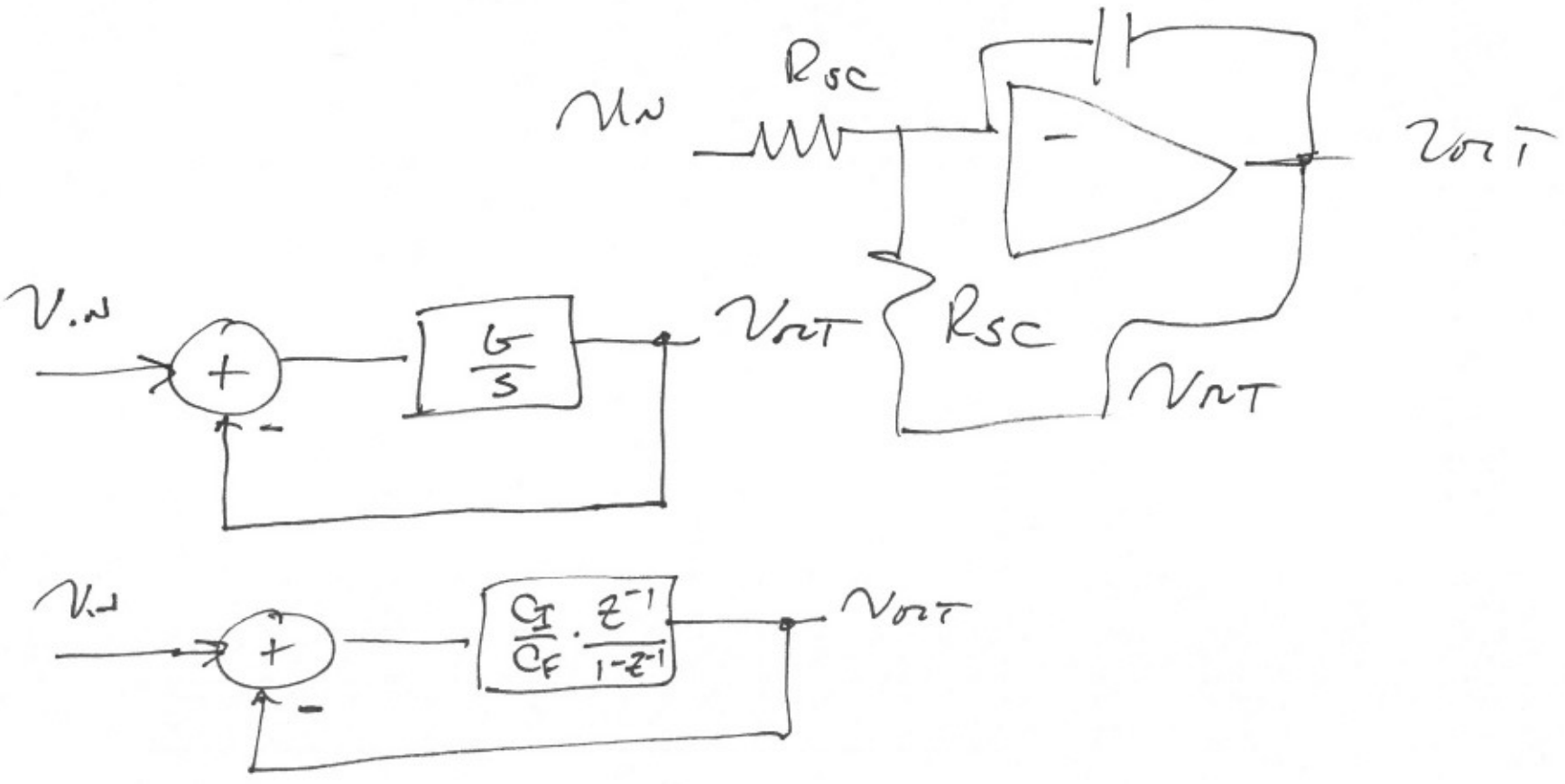
Eqs. (1.62) (1.66)

$$z = e^{j2\pi \frac{f}{f_s}} \simeq 1 + j2\pi \frac{f}{f_s} \quad \downarrow f \quad \frac{1}{2|\sin\pi \frac{f}{f_s}|}$$

page 90

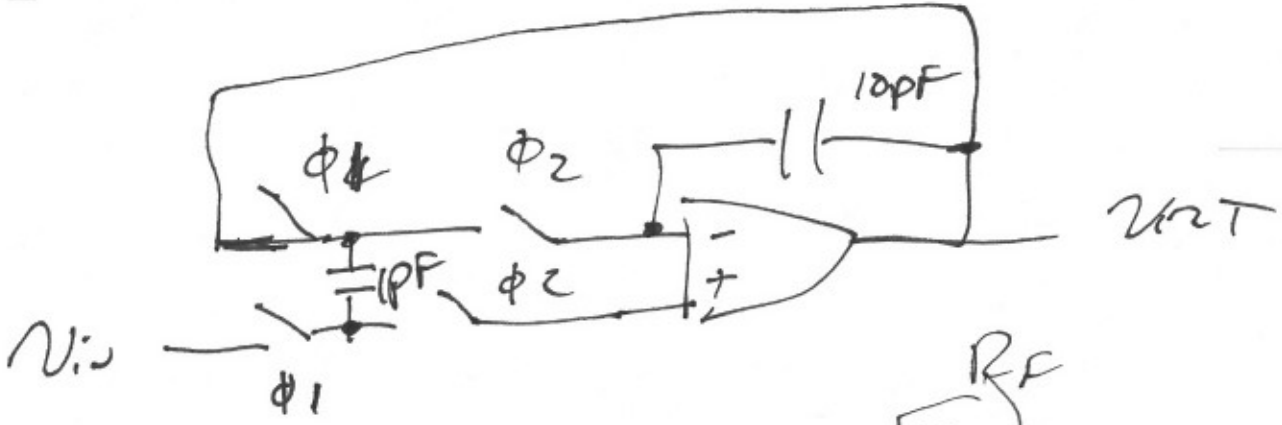
$$\frac{V_{OUT}}{V_{IN} - V_{OUT}} \approx \frac{C_I}{C_F} \cdot \frac{1}{2\pi f / f_s} = G \cdot \frac{1}{s}$$

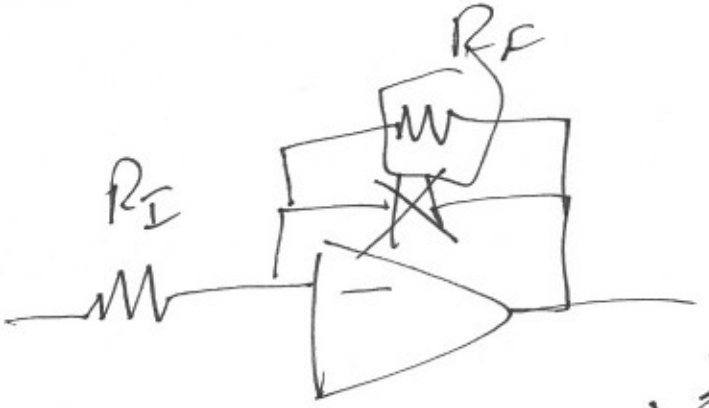
$$R_{SC} = \frac{1}{C_I \cdot f_s} = \frac{T_s}{C_I}$$

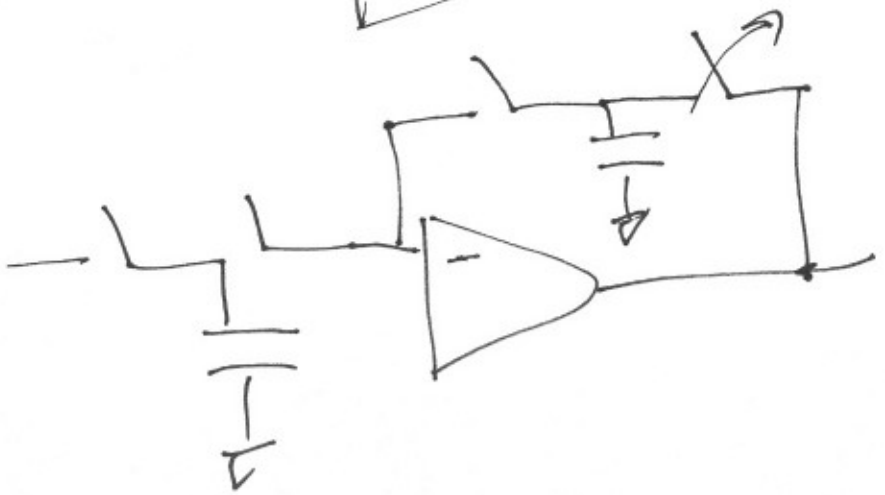


2)

Example 3.6

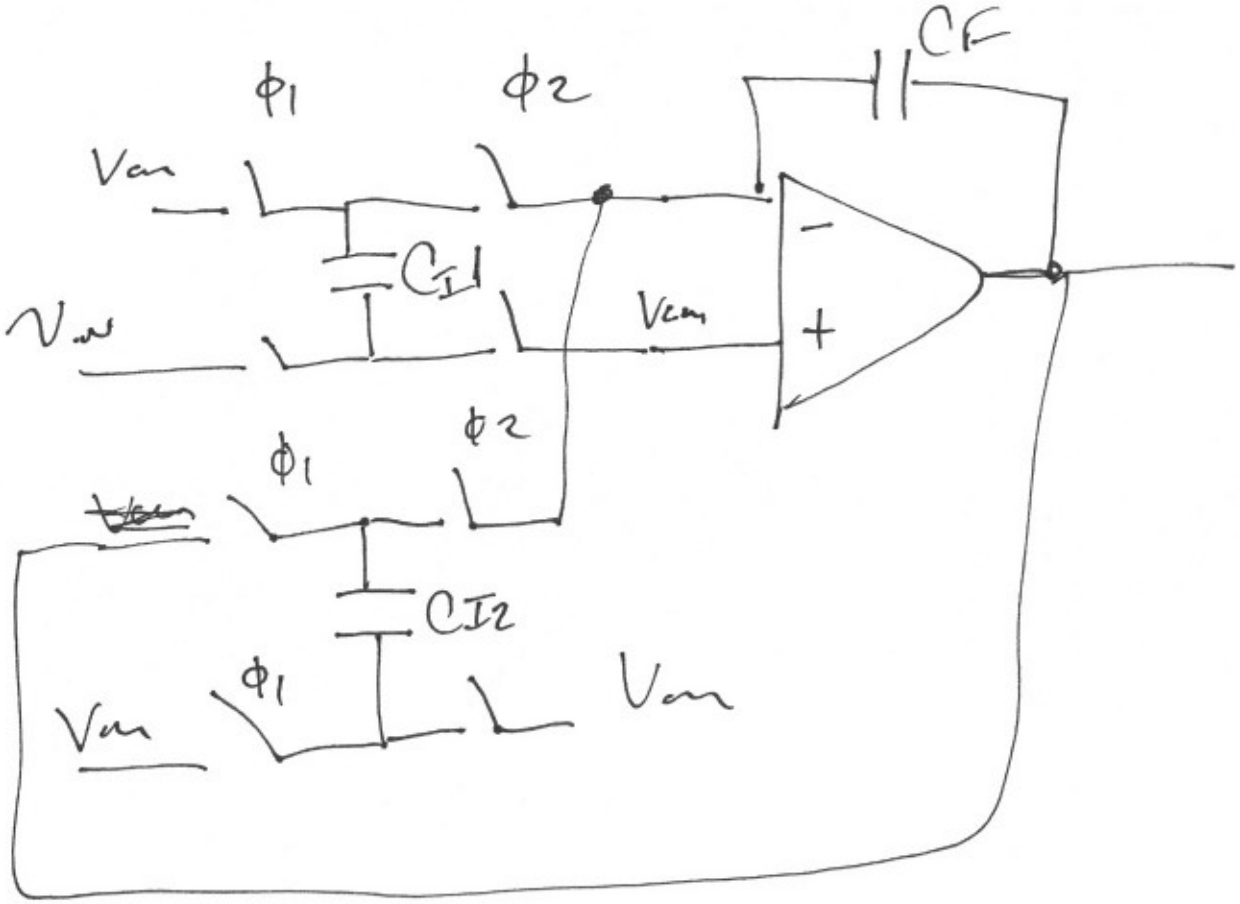






good??

3)



$$G_1 = \frac{C_{I1}}{C_F} \cdot f_s \;, \quad G_2 = \frac{C_{I2}}{C_F} \cdot f_s \cdot \frac{1}{G_1}$$

$$= \frac{C_{I2}}{C_{I1}}$$

GAIN SCALING

4)