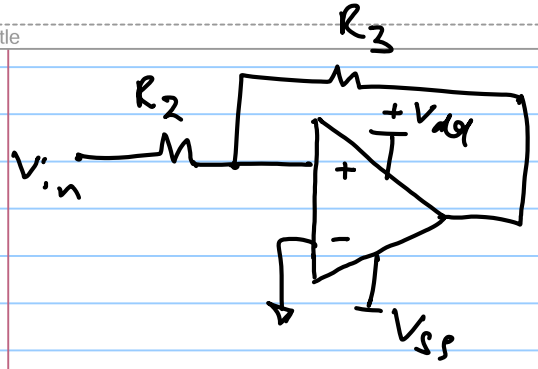
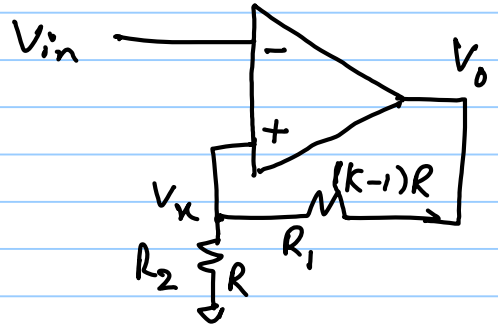
Note Title 1/31/2020



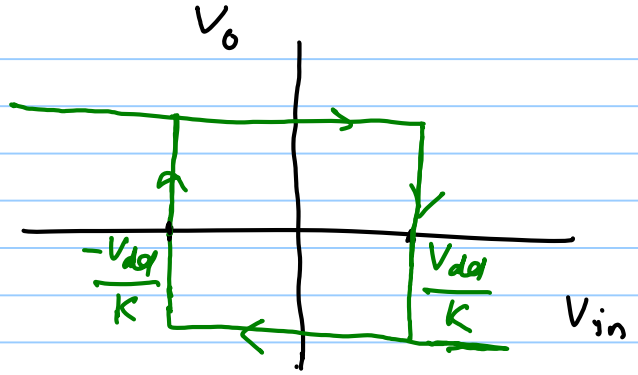
$$V_{hyst} = \frac{R_2}{R_3}\left(V_{dd} - V_{ss}\right)$$

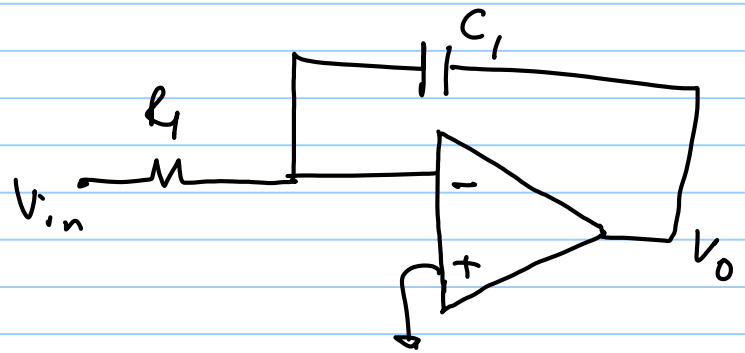


$$V_x = \frac{V_0}{K}$$

$V_{in} > V_x$, $V_0 = -V_{dd}$

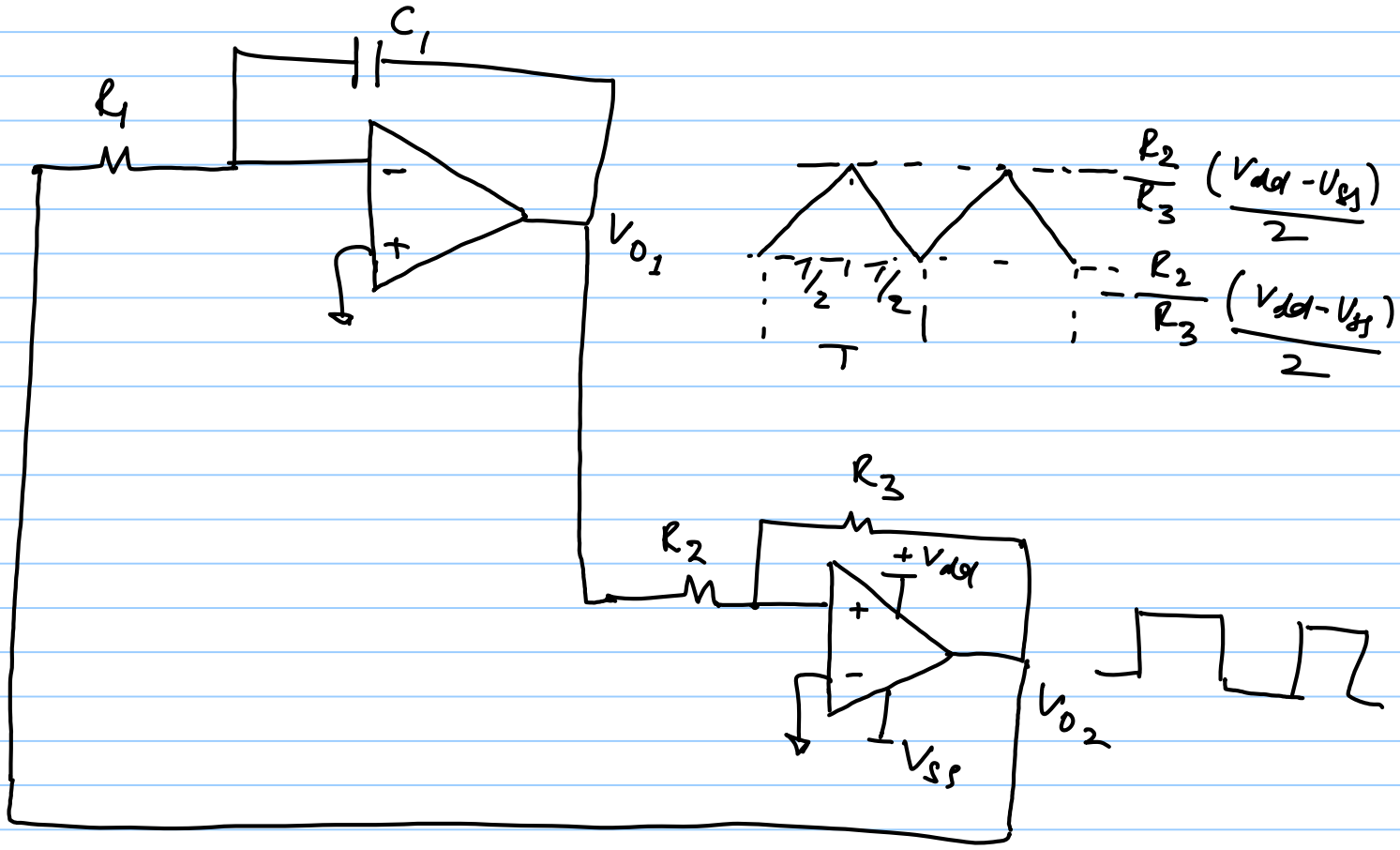
$V_{in} < V_x$, $V_0 = V_{dd}$

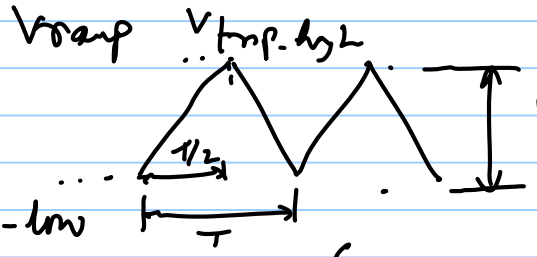




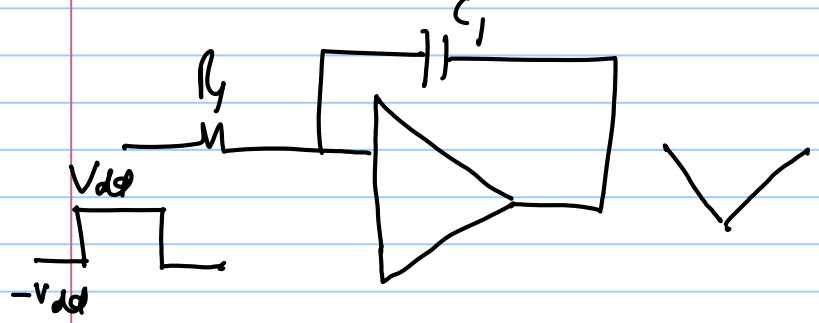
$$V_o(t) = -\frac{1}{R C_1} \int_0^t V_{in}(t)\, dt$$

$$V_o(s) = -\frac{1}{R_1 C_1} \cdot \frac{1}{s} V_{in}(s)$$


C1
R1
Vo1
R2/R3 (Vdd - Vss)/2
R2/R3 (Vdd - Vss)/2
1/2
1/2
T
R3
R2
+Vdd
Vo2
Vss



$$V_H = \frac{R_2}{R_3}(V_{dd} - V_{ss})$$



$$V_{trip-low} - \frac{1}{R_1 C_1}\int_0^{T/2}(-V_{dd})\,dt = V_{trip-high}$$

$$-\frac{R_2}{R_3} V_{dd} + \frac{V_{dd}}{R_1 C_1} \times T/2 = \frac{R_2}{R_3} V_{dd}$$

$$\frac{V_{dd}}{R_1 C_1} \cdot T/2 = 2 \frac{R_2}{R_3} V_{dd}$$

$$\boxed{T = 4 \frac{R_2}{R_3} \cdot R_1 C_1}$$

$$F_{sw} = \frac{1}{T}$$