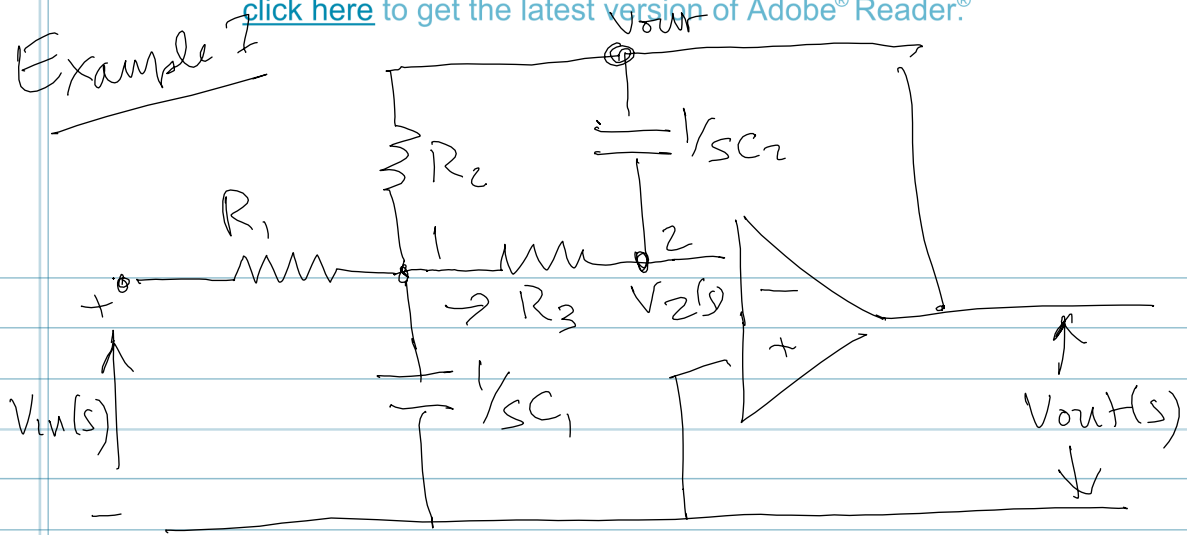


Example 7



@ Node 1

$$\frac{V_1(s) - V_{in}}{R_1} + \frac{V_1}{1/sC_1} + \frac{V_1 - V_{out}}{R_2} + \frac{V_1 - V_2}{R_3} = 0$$

@ Node 2

$$\frac{V_2 - V_1}{R_3} = \frac{V_{out}(s)}{1/sC_2}$$

Because V_2 is virtual ground $V_2 = 0$

$$V_1(s) = \frac{(-sR_3C_2)}{R_2} V_{out}(s)$$

$$\left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + sC_1 \right) \left(-sR_3C_2 - \frac{1}{R_2} \right) V_{out}(s)$$

$$= \frac{1}{R_1} V_{in}(s)$$

$$G(s) = \frac{V_{out}(s)}{V_{in}(s)} = \frac{-1}{R_1 \left[\left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + sC_1 \right) (sR_3C_2) + \frac{1}{R_2} \right]}$$