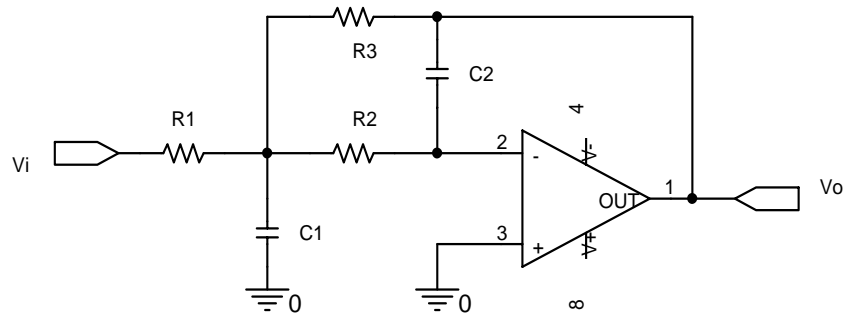
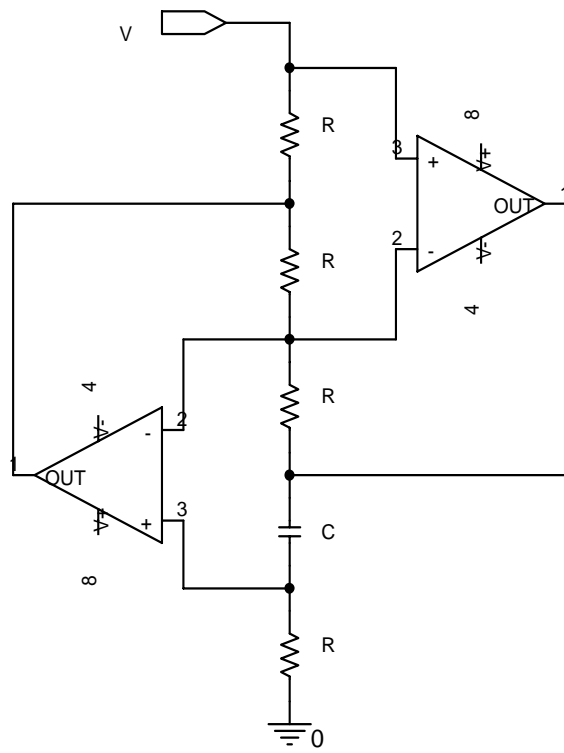


- (1) 2 multiple-feedback , $R_1 = R_2 = R_3 = R$
 , $C_1 = nC, C_2 = C$.



- (a) 가?
 (b) 가 10 KHz Butterworth 가
 , Q .
 (c) Bode plot .

- (2)



- (a) V 가 .
 (b) V 가 .

(3) (GBP) 1 MHz, a_0 가 100dB, f_a 가 10 Hz op amp 가

(a) Open-loop gain $|a|_{dB}$.

(b) 1000, 3 dB f_A 가 10 kHz

(c) 100, 3 dB f_A 가 100 Hz

(4) 220V, 60Hz dc 5V ,

(5) DAC ADC .

(a) R-2R ladder 4-bit DAC .

V_{REF} 5 V, V_{FSR} 10 V 가 .

, DAC LSB V .

(b) 4-bit successive approximation ADC 0 – 1 V .

0.63 V, ADC