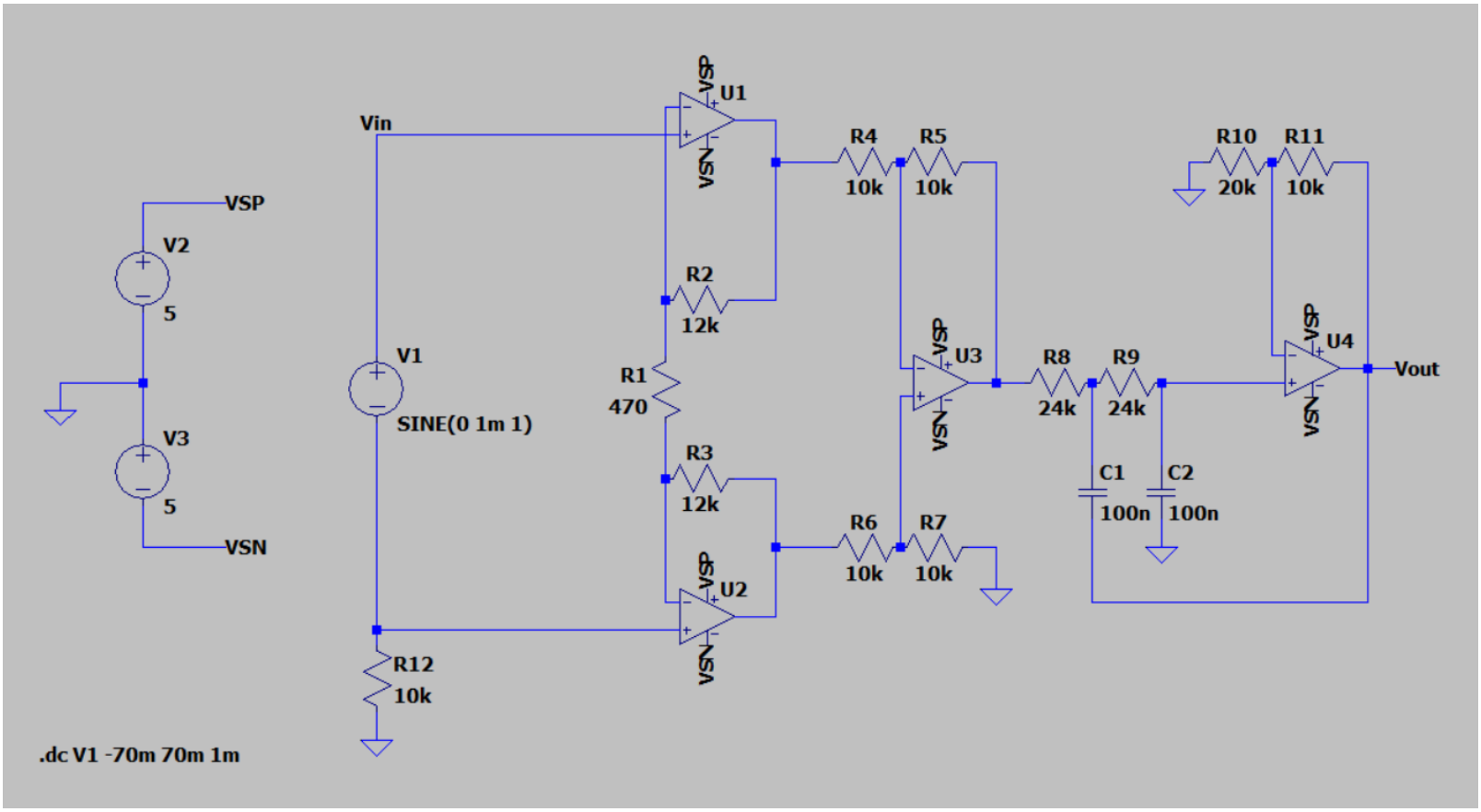
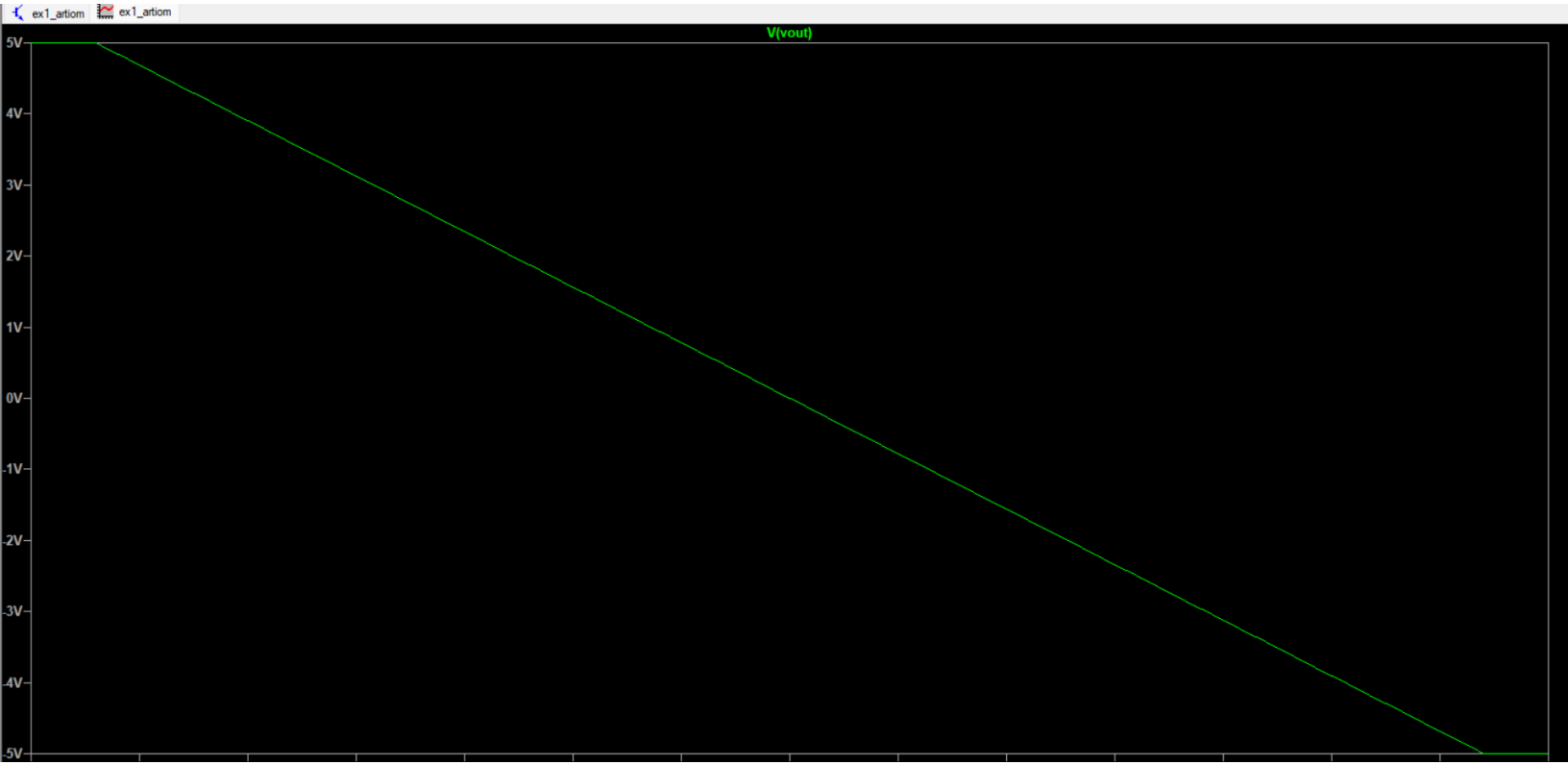
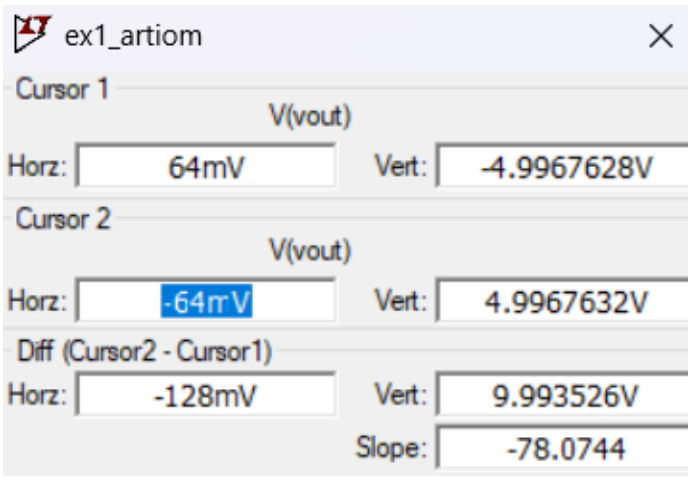
Pujleacov Artiom 325 CB

Proiect DEEA 2023



2.1





Domeniul de intrare (-64 mV, 64 mV)
Domeniul de iesire (-4.99 V, 4.99 V)
Amplificarea de tensiune : -78.07

2.2. Domeniul tensiunii de intrare in care schema functioneaza linear (Vi-, Vi+) = (-64mV, 64mV)

$$A = \frac{\Delta V_o}{\Delta V_i} = \left(1 + \frac{R_2 + R_3}{R_1}\right)\left(-\frac{R_5}{R_4}\right)\cdot\left(1 + \frac{R_{11}}{R_{10}}\right) =$$

$$= \left(1 + \frac{12K + 12K}{470}\right)\left(-\frac{10K}{10K}\right)\left(1 + \frac{10K}{20K}\right) =$$

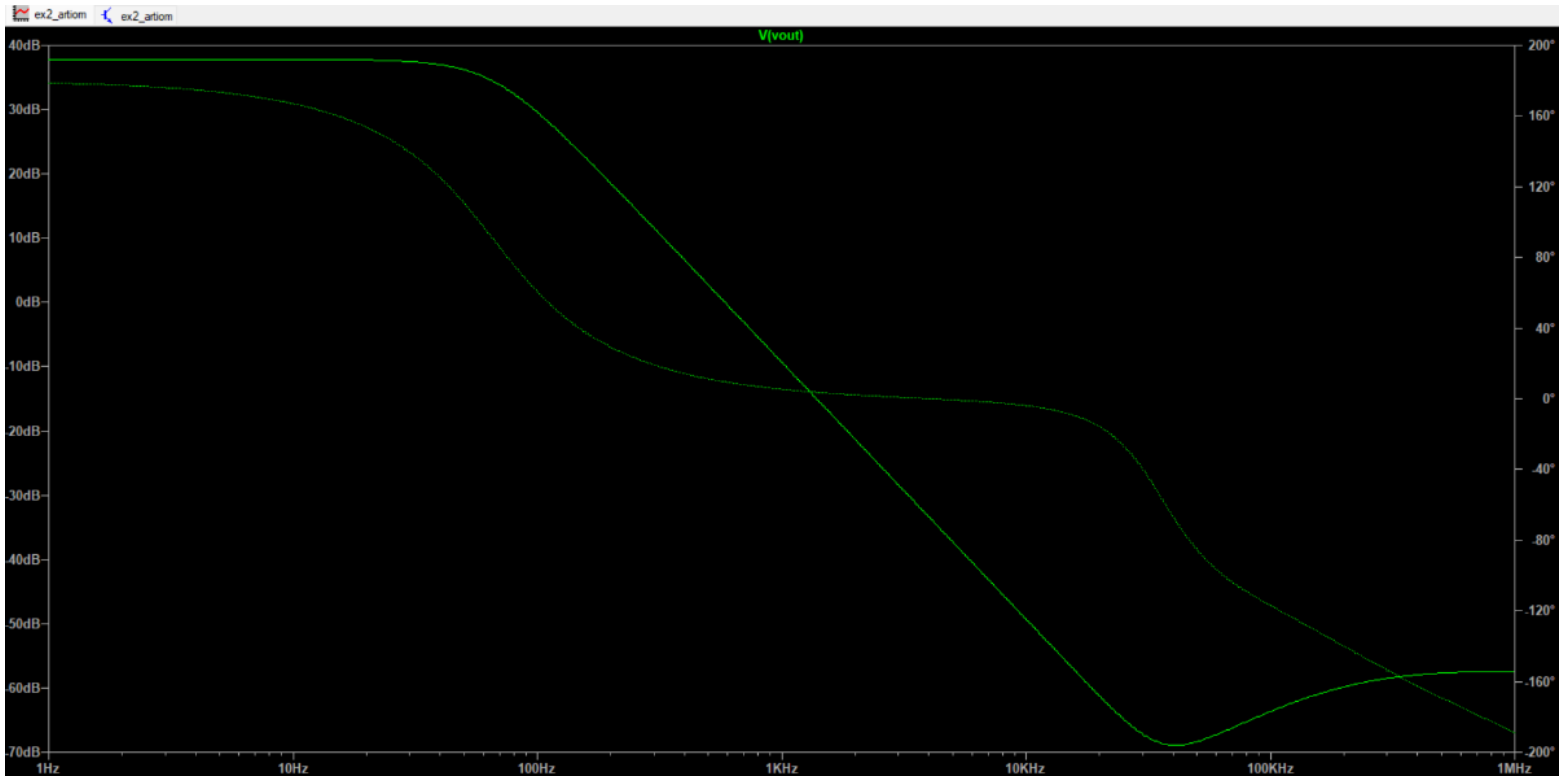
$$= 52{,}06 \cdot (-1) \cdot \frac{3}{2} = -78{,}09$$

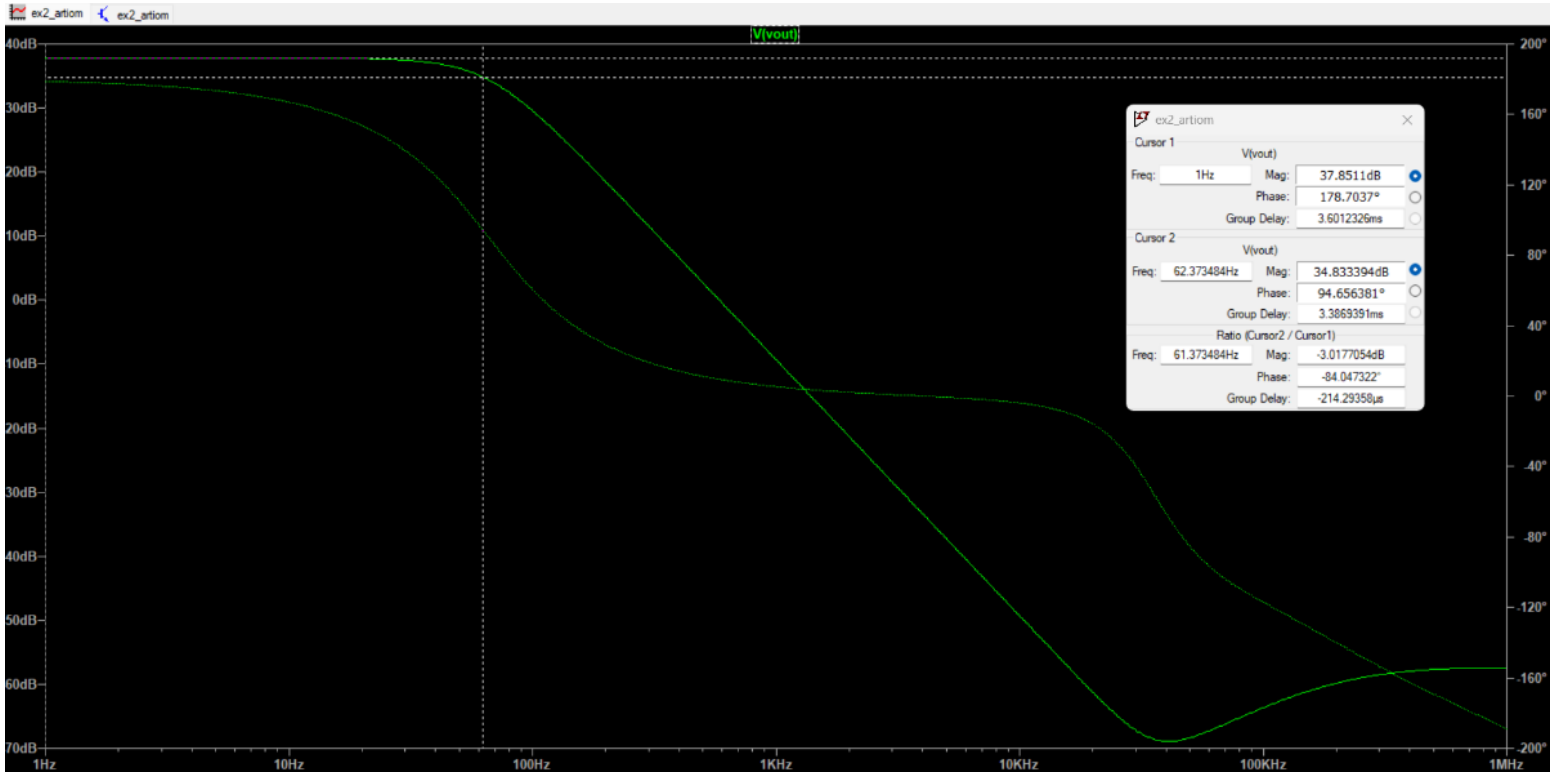
$$V_{i+} = \frac{V_{SM}}{A} = \frac{-5}{-78{,}09} = 0{,}06402$$

$$V_{i-} = \frac{5}{-78{,}09} = -0{,}06402$$

2.3. Amplificarea tensiunii schemei (semnale foarte lent variabile)
Amplificare = -78.07
Diferenta intre valoarea simulare si cea ideala obtinuta prin calcul este din cauza amplificarii finite a amplificatoarelor operationale

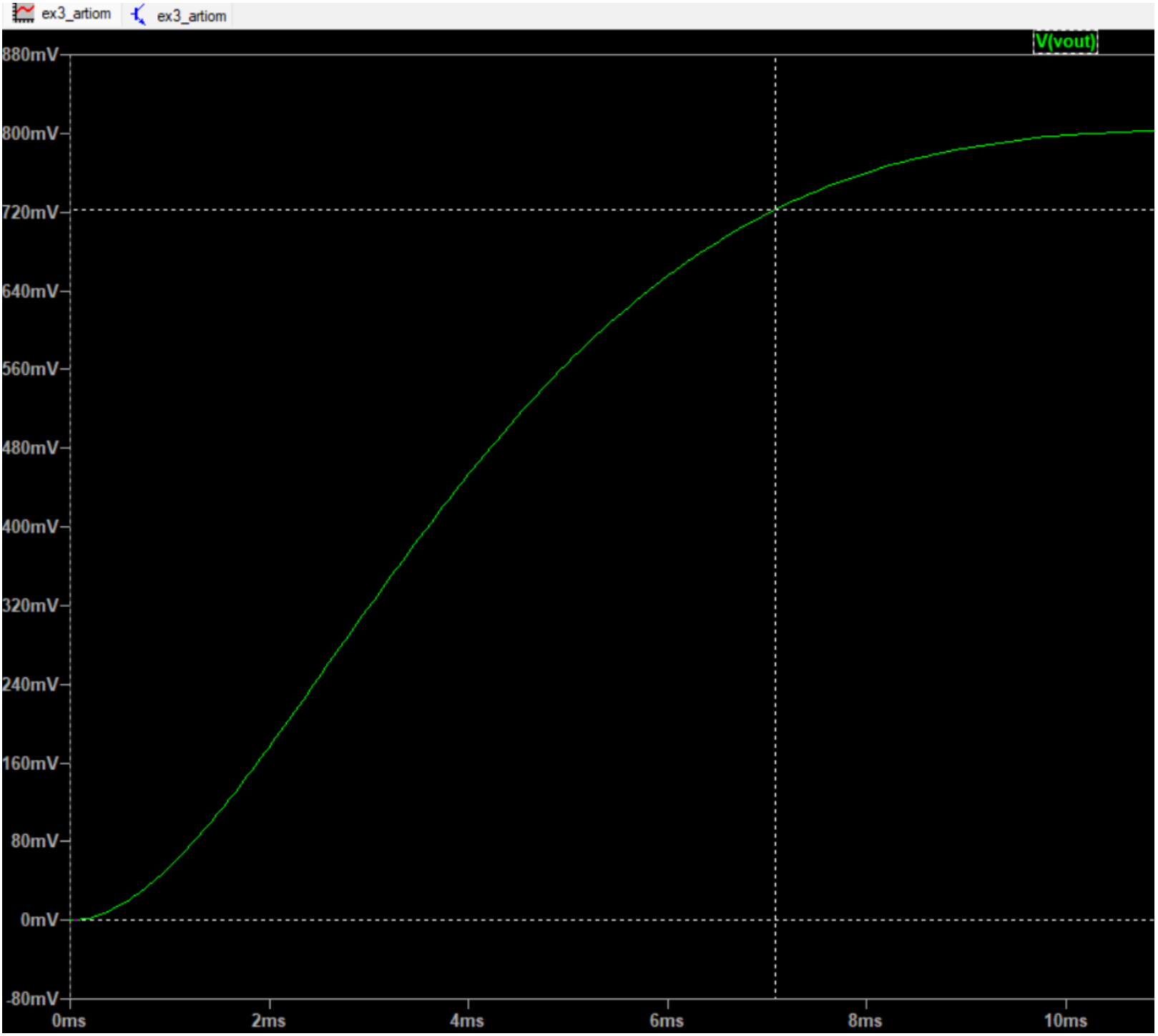
3.1. Caracteristica de frecventa a schemei (sufficient modulul amplificarii) la scara logaritmica



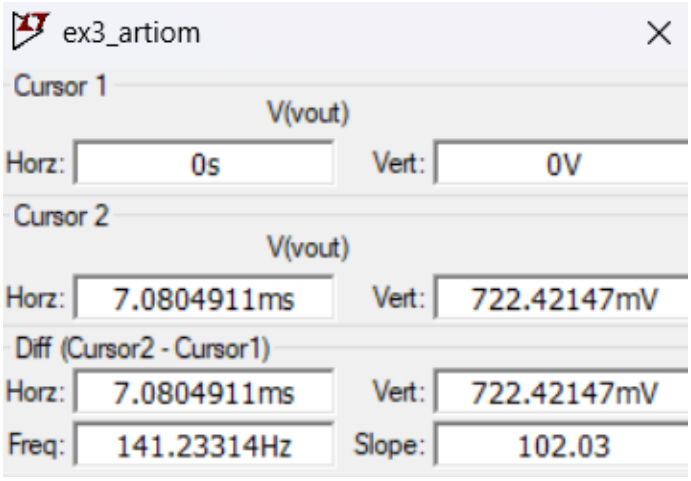


Banda filtrului trece jos incepe de la 0 la -3db.Primul cursor se afla la cea mai din stanga valoare 1Hz , iar cel de al doilea unde amplificarea de putere scade la jumatate.

4.1

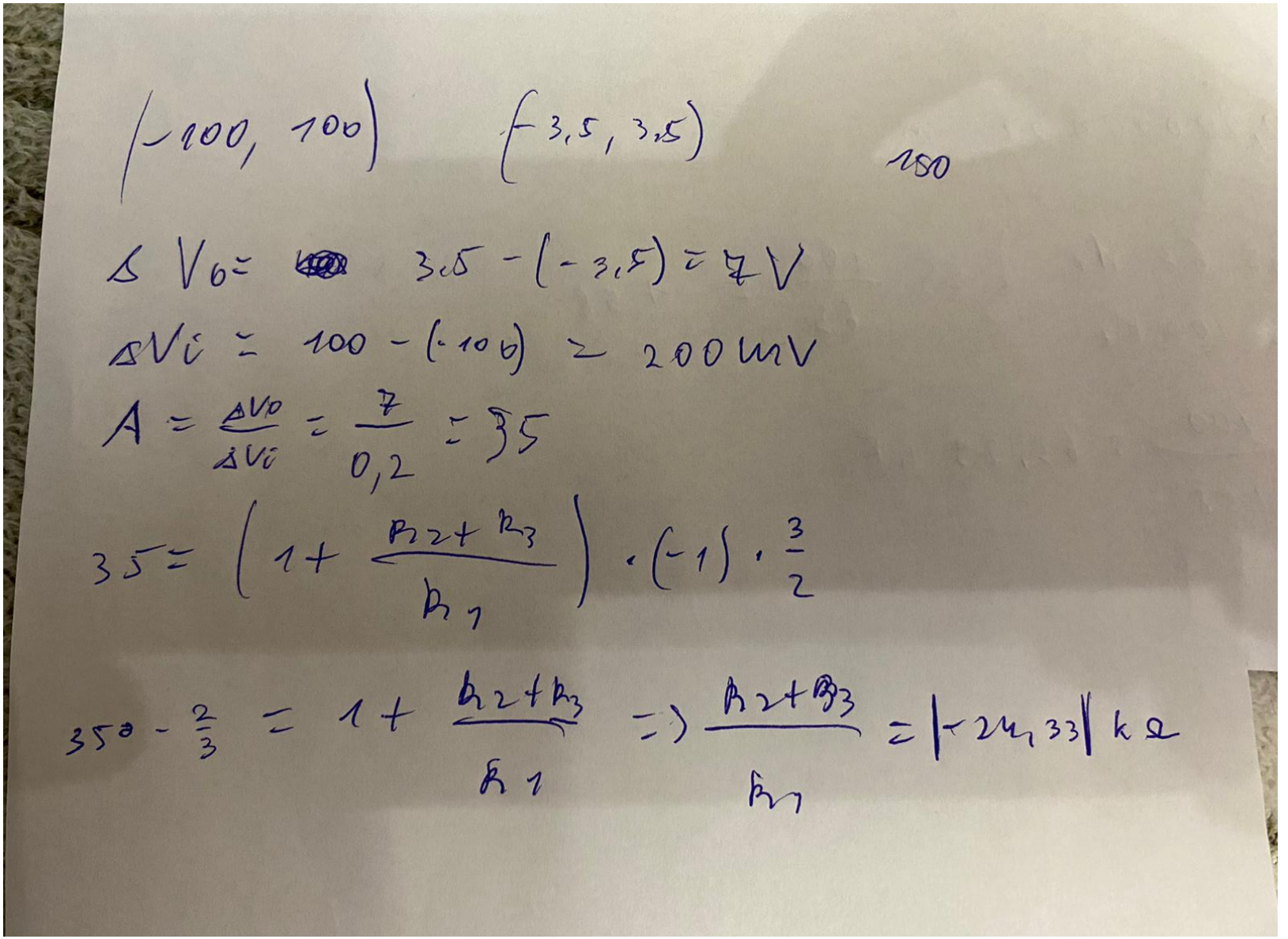


4.2 Timpul de crestere (intervalul dintre inceputul fenomenului tranzitoriu pana la parcurgerea 90% din amplitudinea varf la varf a iesirii



Graficul indica o valoare de stabilizare. Primul cursor este la momentul de inceput al fenomenului si al doilea la 90% din valoarea indicate . Timpul de crestere este de 7.0804911ms

5.1. Schema trebuie sa transfere domeniul specificat (-100mV, 100mV) in domeniul de iesire (-3.5 , 3.5)



Find the best combination of resistors to satisfy the given ratio, using values from the series selected above.

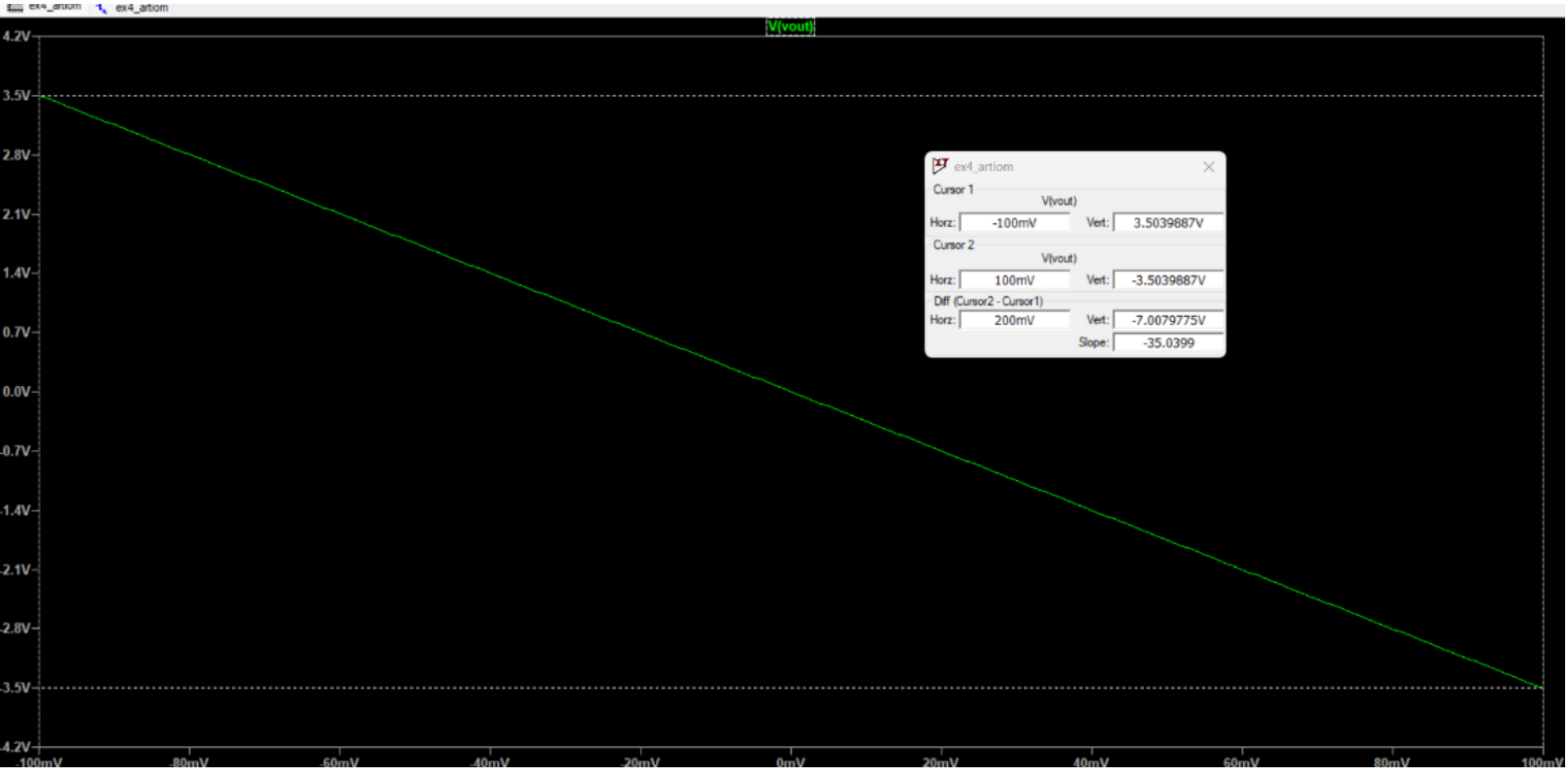
Select which type of ratio to solve for:

- (●) Resistor ratio: 24.33 R1/R2
- ( ) Voltage divider V_H: 3.3 V_L: 0.8 $V_H > V_L$

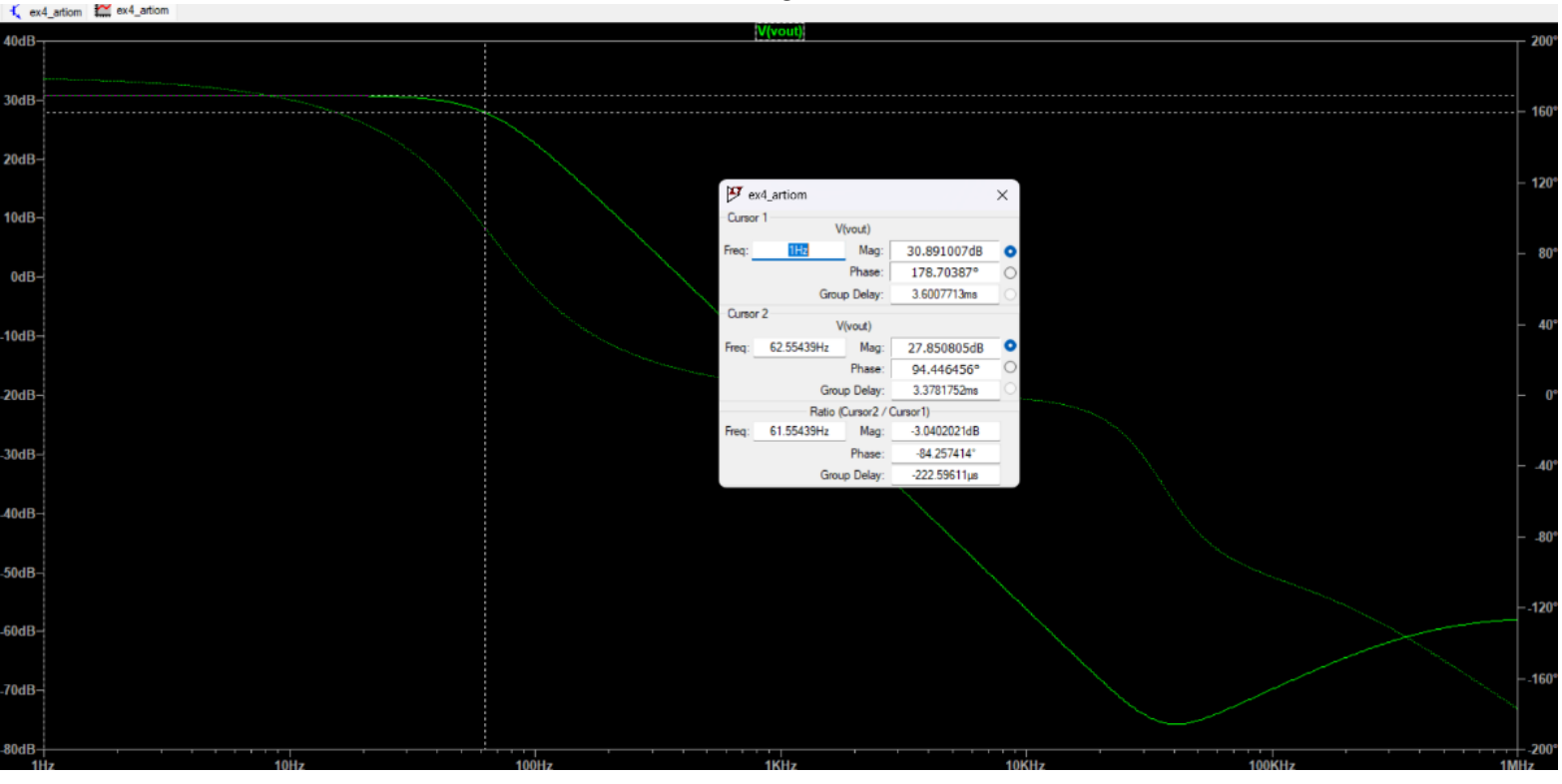
Optional: [ ] Inverse What is this?

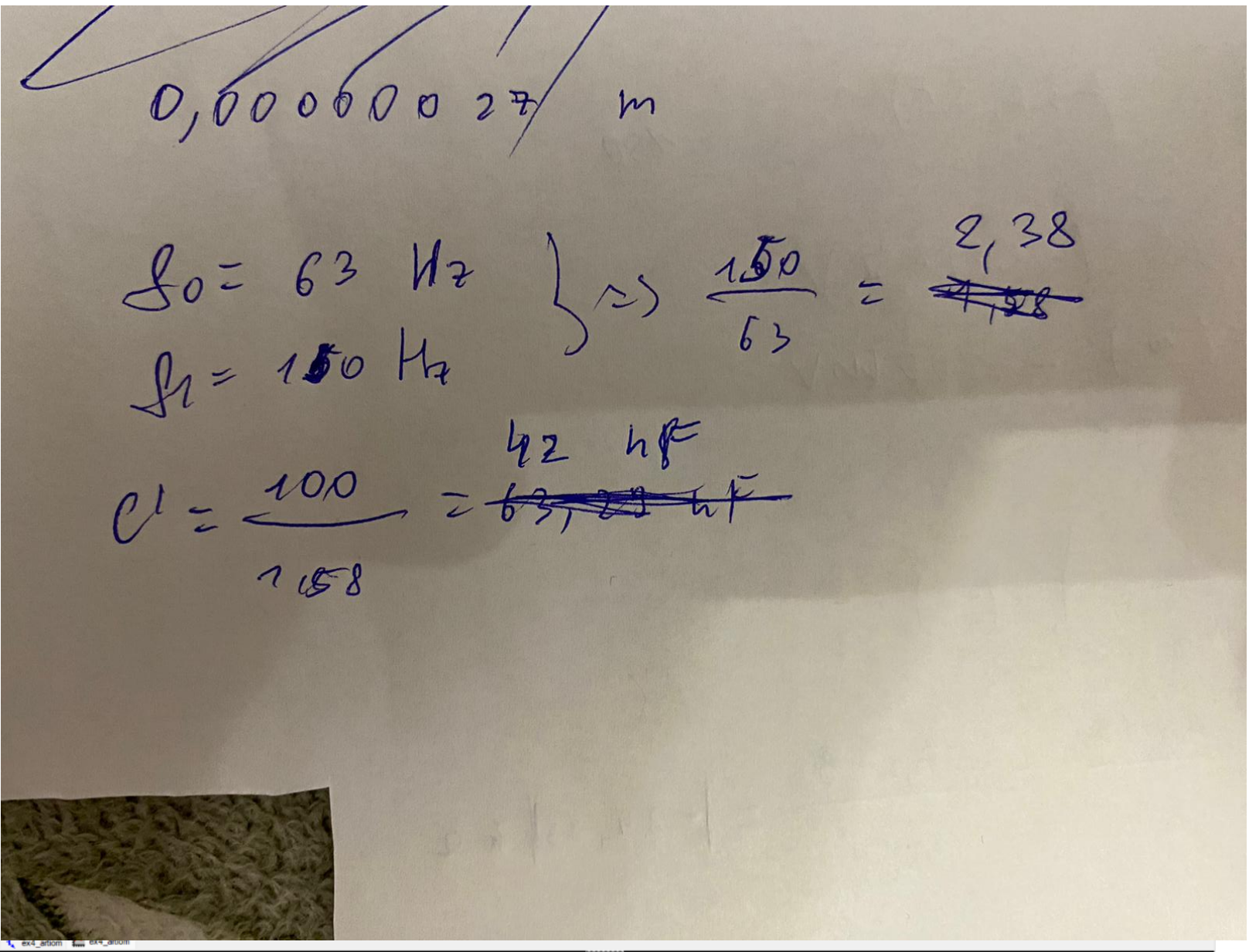
Calculate...

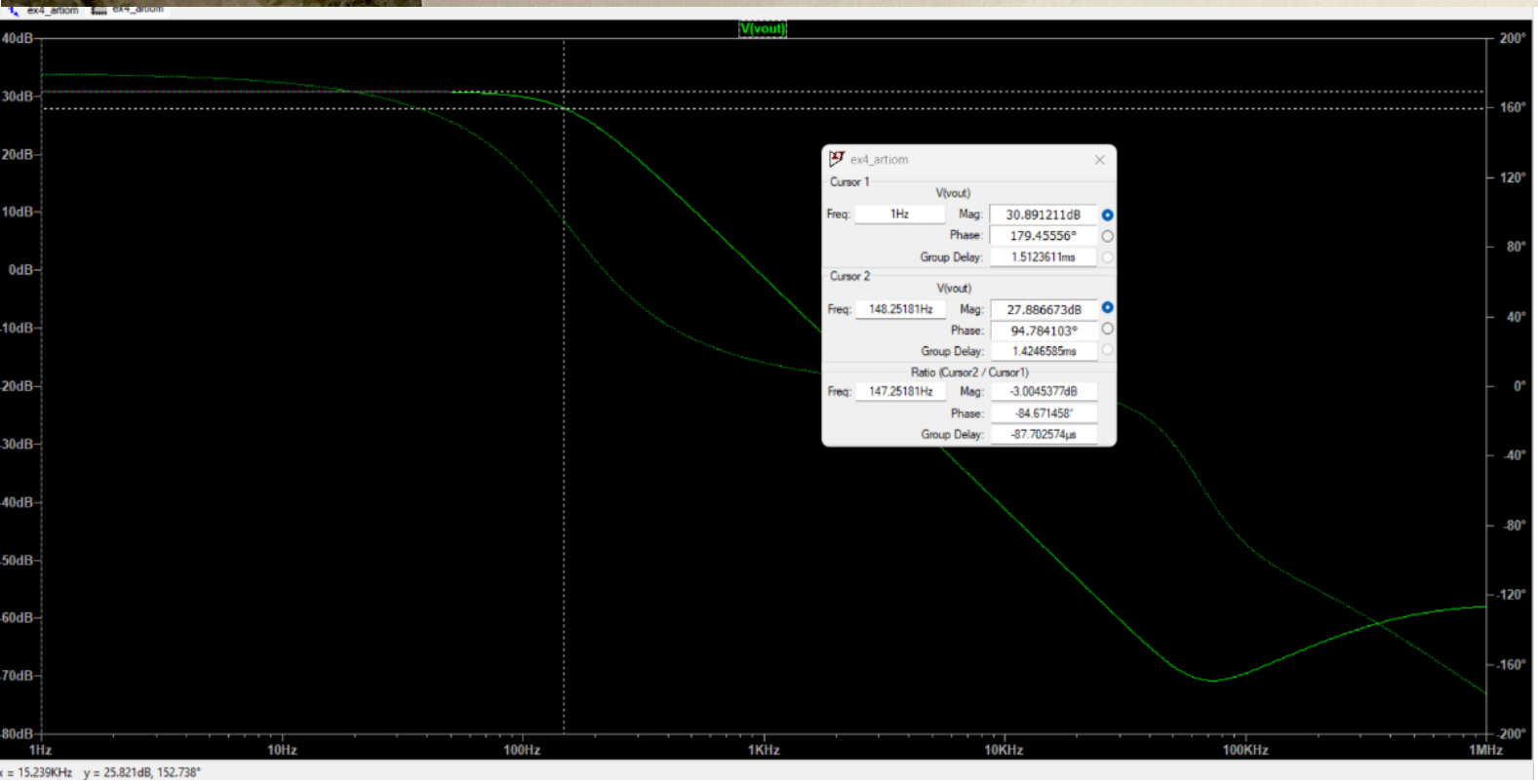
Single: 284 KΩ ÷ 12.7 KΩ = 24.330708661 0.00 %



5.2







Simularea arata valoarea lui f in punctul de -3db avand o mica eroare datorata LTSpice-ului