

Circuit Diagram :

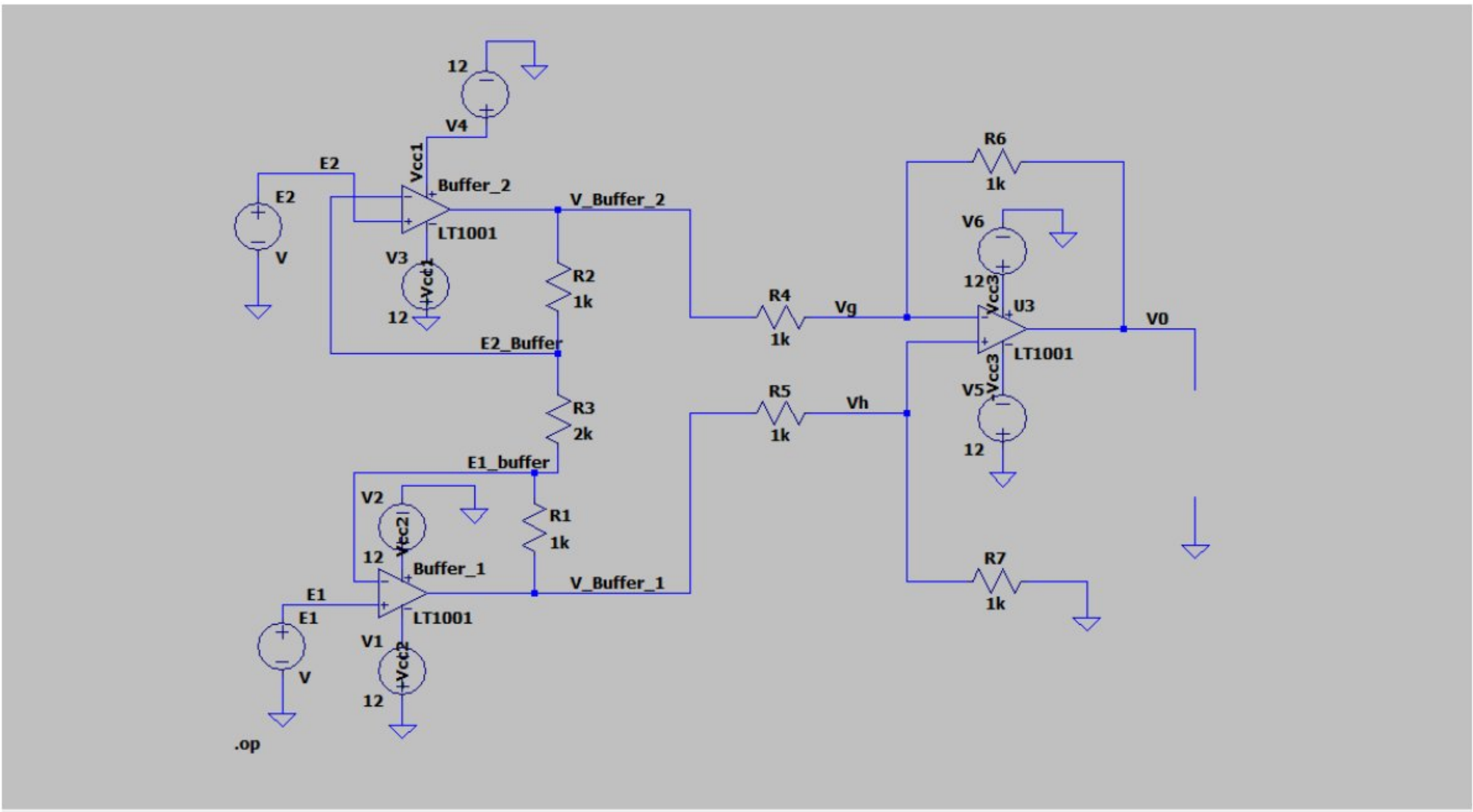


Figure 2: DC voltage amplifier setup for experiment

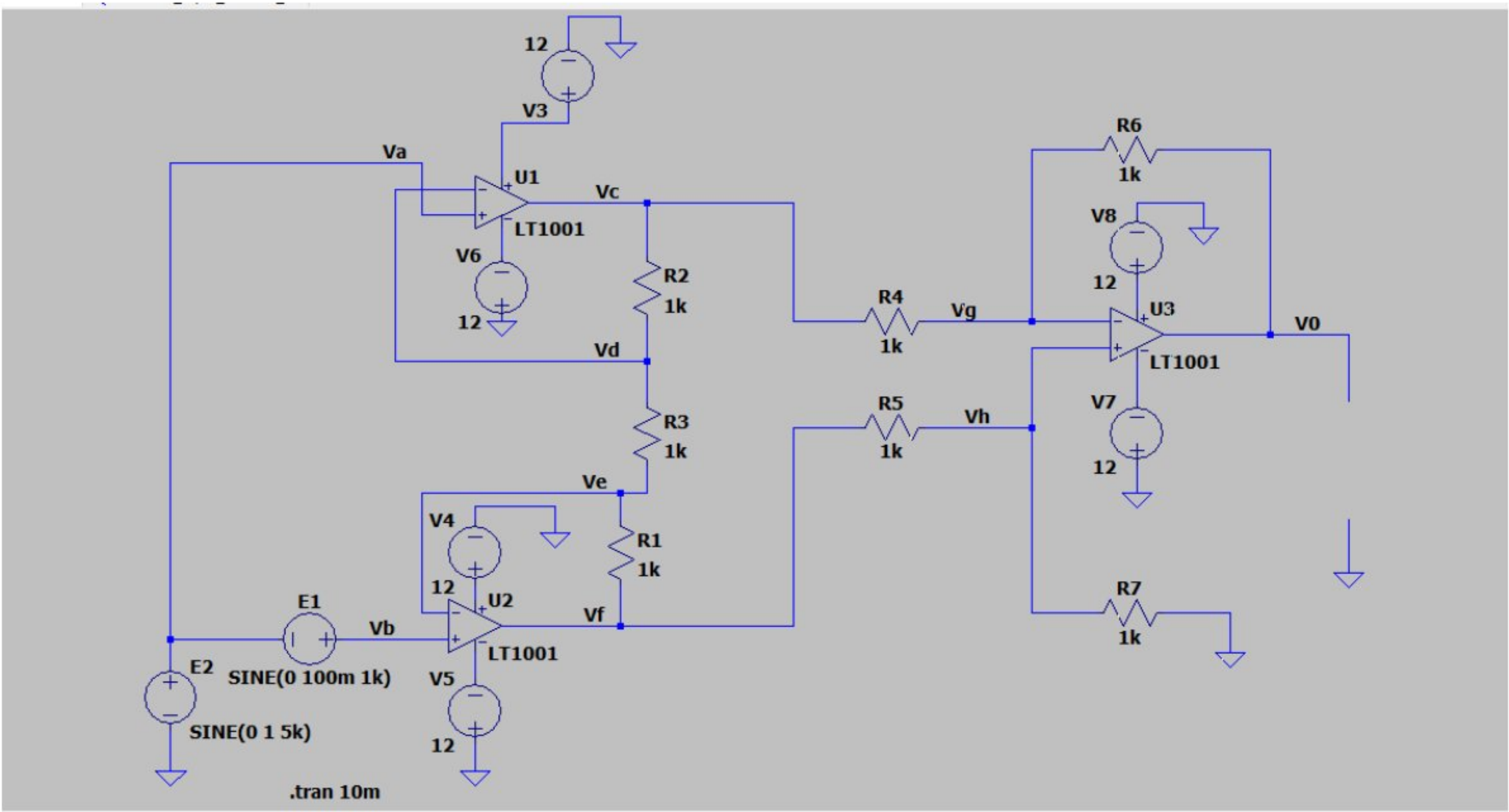


Figure 3: AC voltage amplifier setup for experiment

Simulation Reports :

Part 1: Amplification of DC voltage :

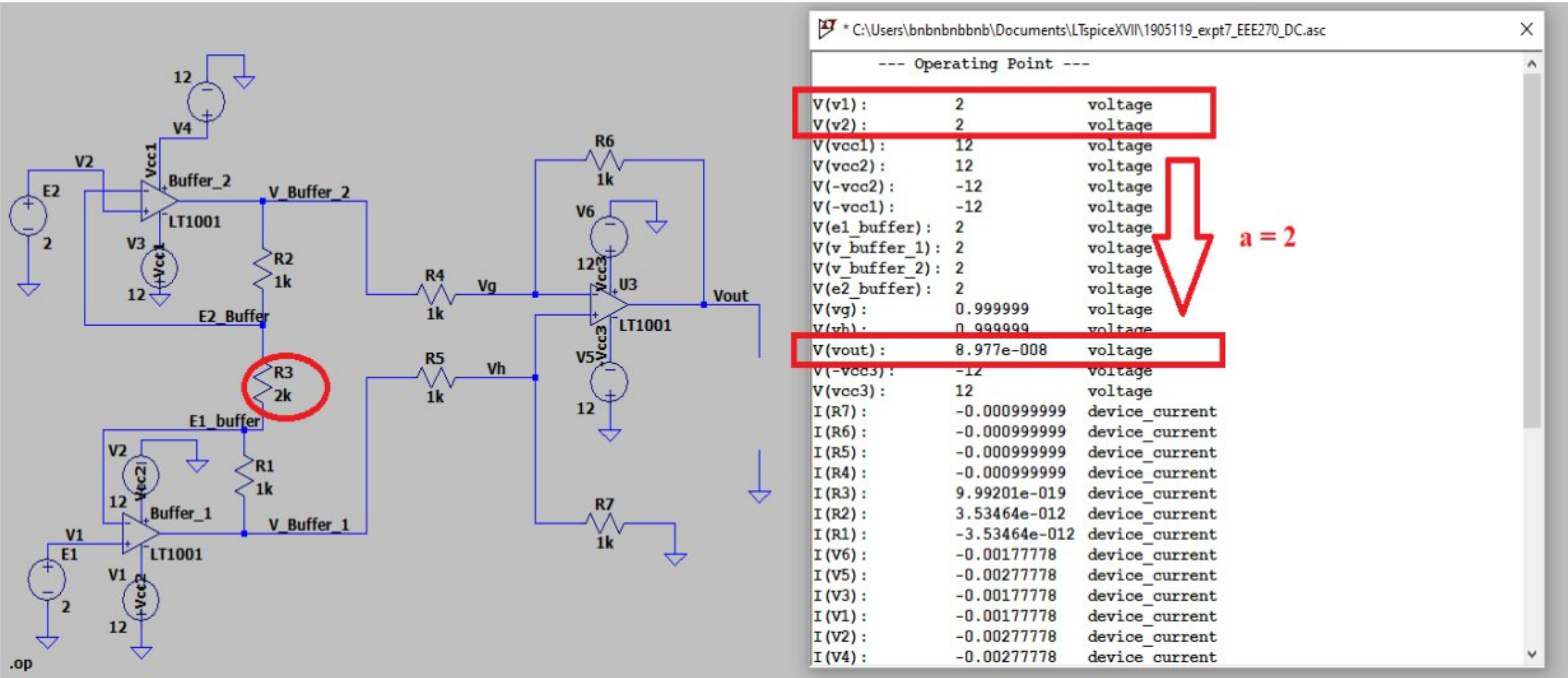


Figure 4: Adjusting potentiometer $R_7 = 1\text{k}\Omega$ so that $V_{\text{out}} = 0\text{V}$ for $V_1 = V_2 = 2\text{V}$

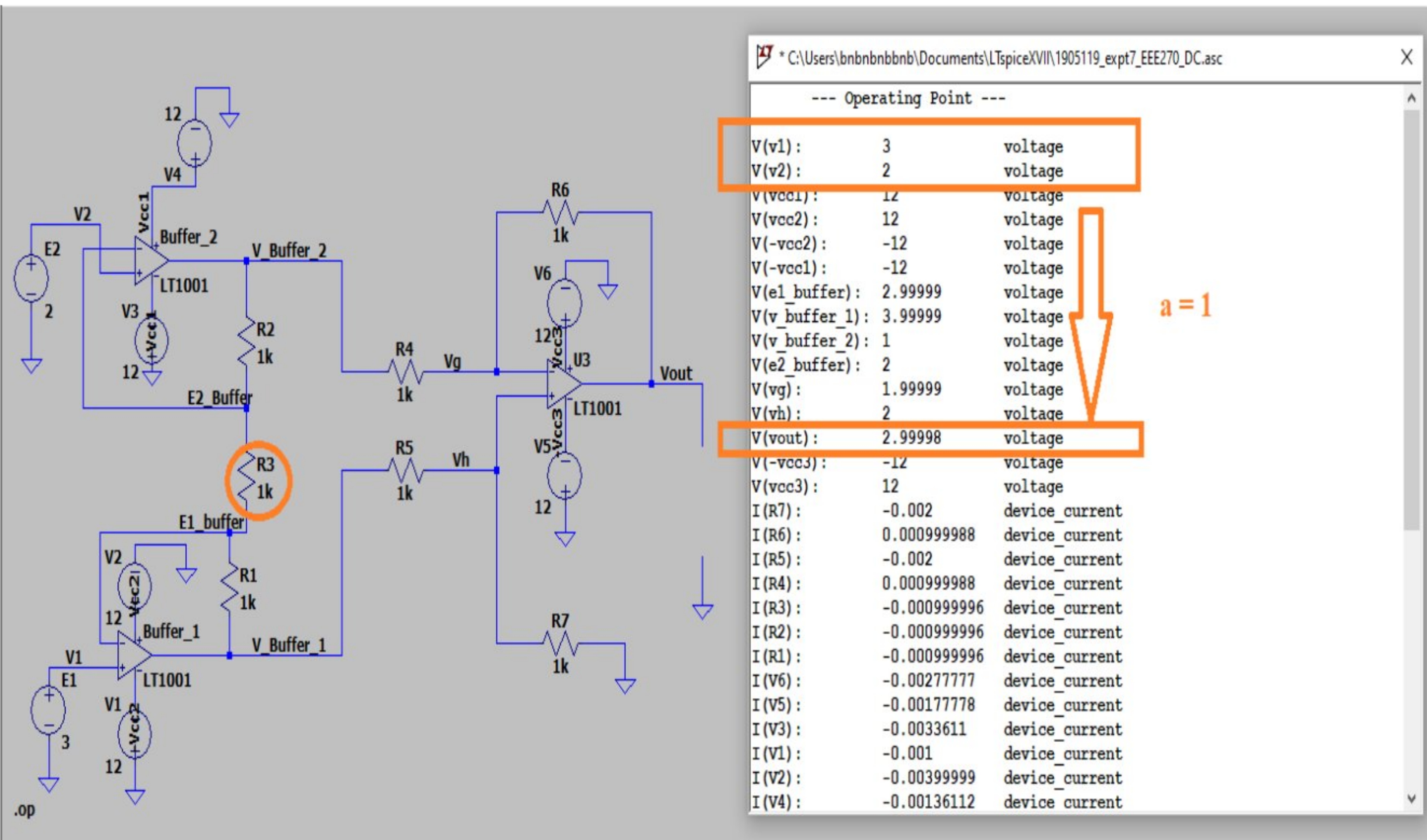


Figure 5: For values $V_1 = 3\text{V}$, $V_2 = 2\text{V}$ and $a = 1$, $V_{\text{out}} = 3\text{V}$

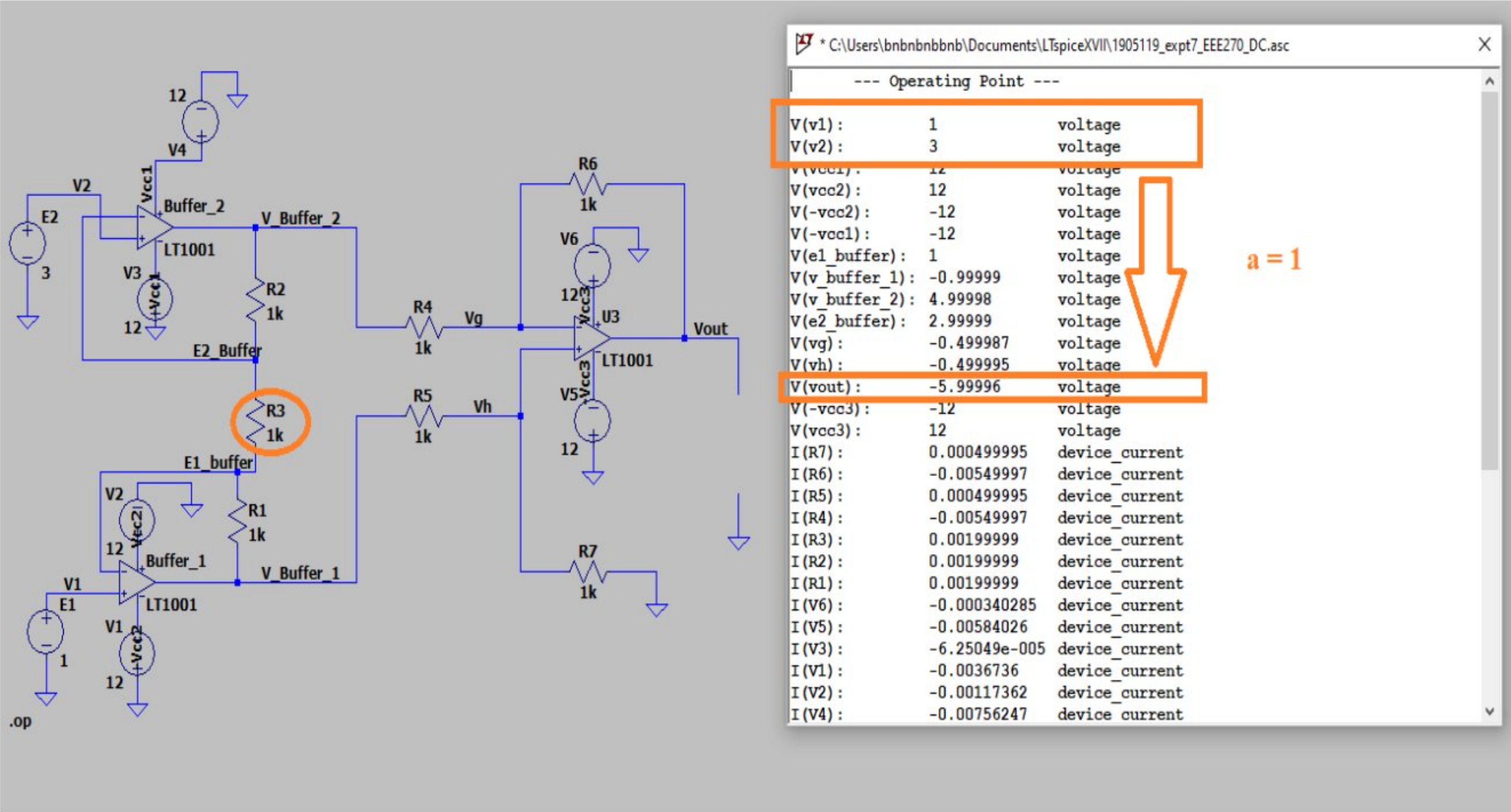


Figure 6: For values $V_1 = 1\text{V}$, $V_2 = 3\text{V}$ and $a = 1$, $V_{\text{out}} = -6\text{V}$

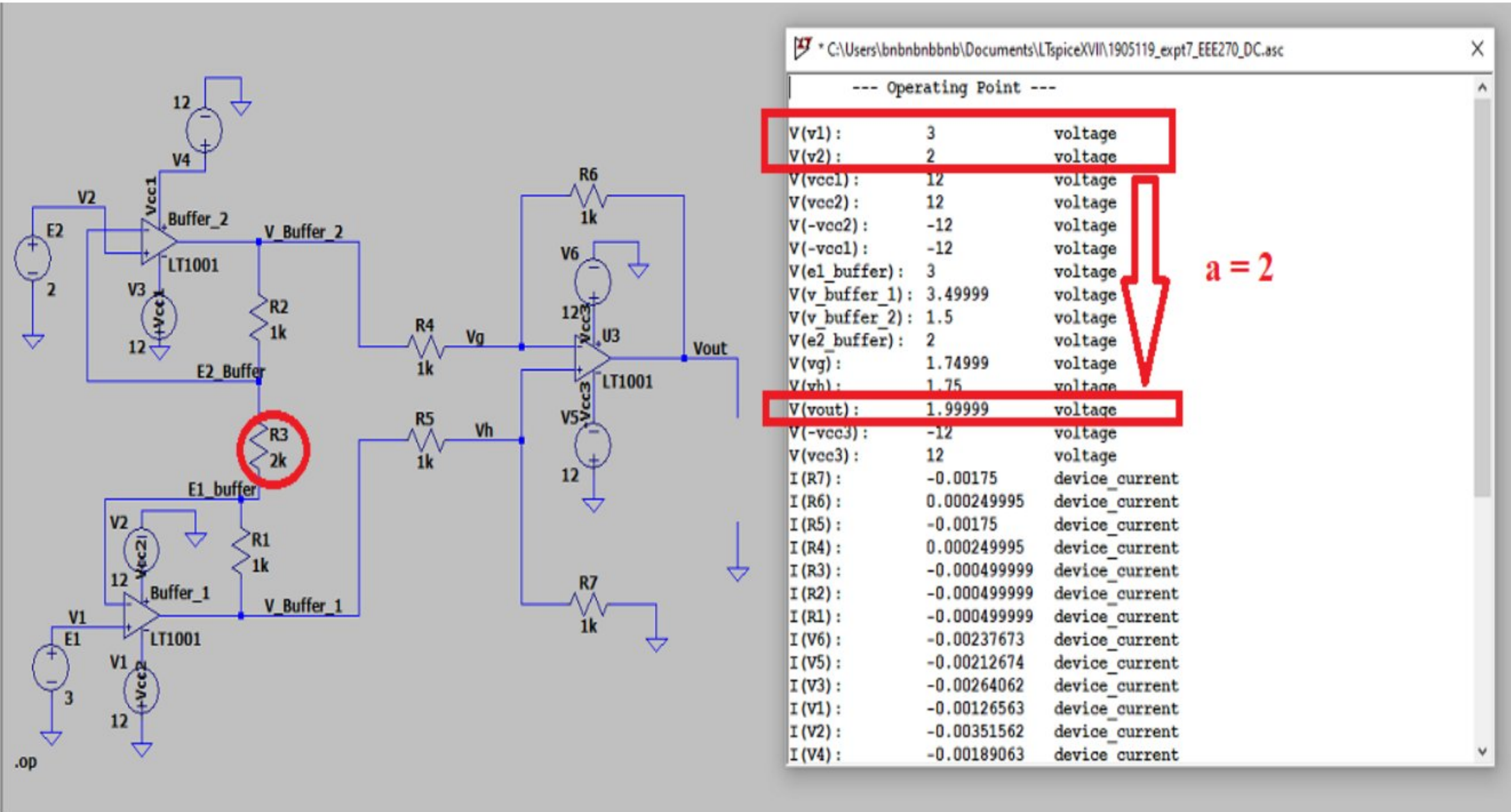


Figure 7: For values $V_1 = 3\text{V}$, $V_2 = 2\text{V}$ and $a = 2$, $V_{\text{out}} = 2\text{V}$

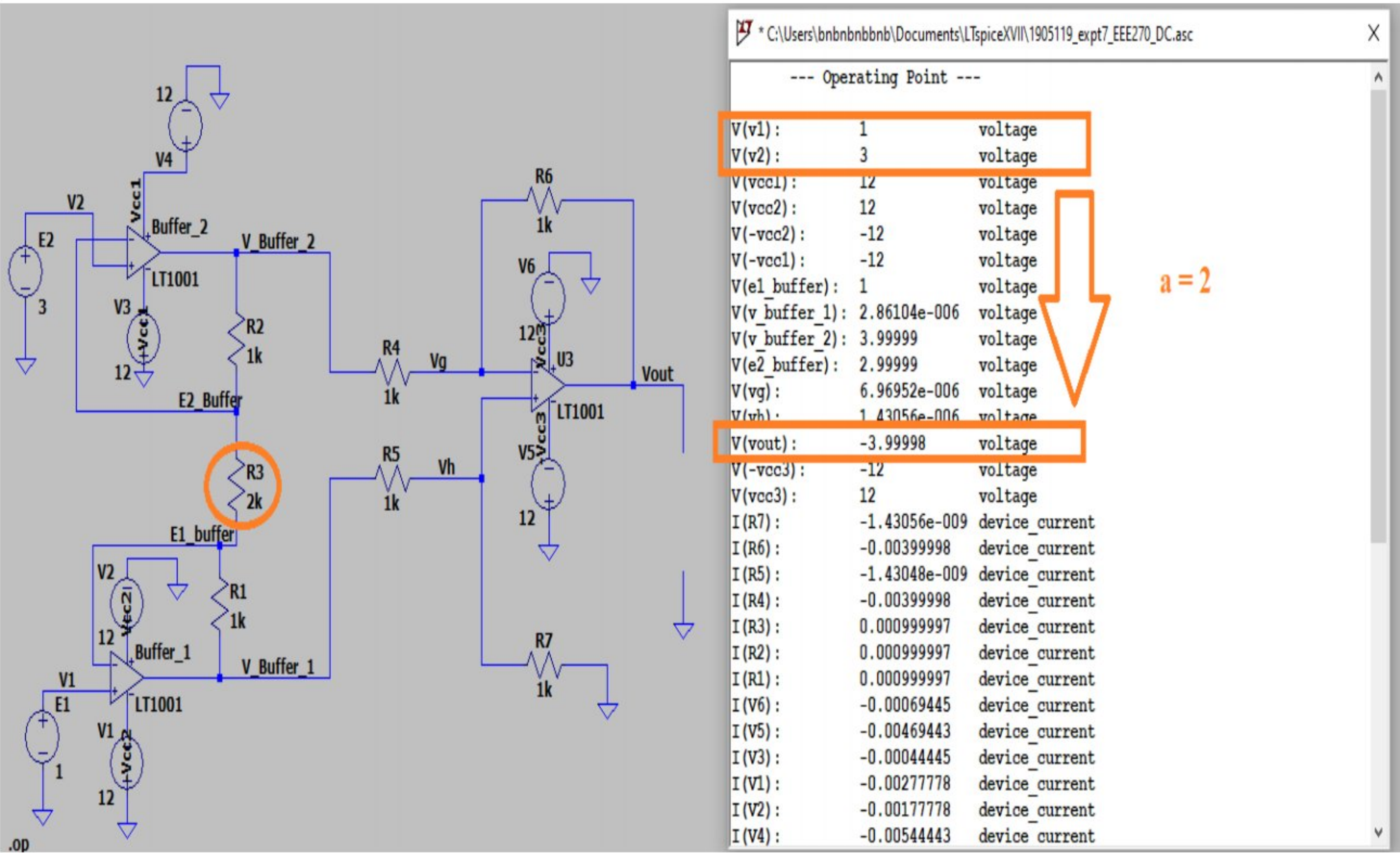


Figure 8: For values $V_1 = 1\text{V}$, $V_2 = 3\text{V}$ and $a = 2$, $V_{\text{out}} = -4\text{V}$

Part 2: Amplification of AC signals

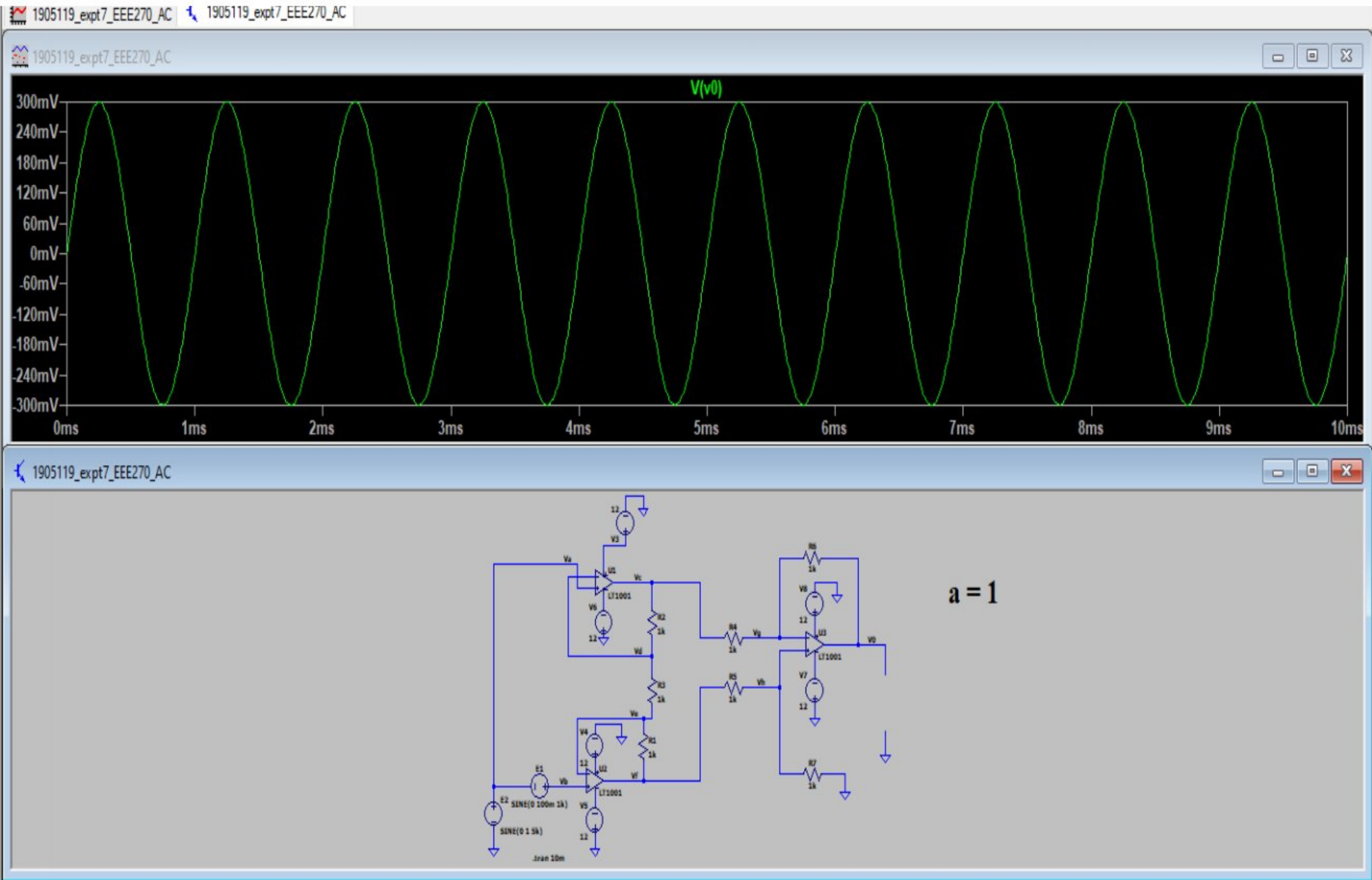


Figure 9: For values $V_1 = 0.1 \sin(2000\pi t)\text{V}$, $V_2 = \sin(10^4 \pi t)\text{V}$ and $a = 1$, $V_{\text{out}} = 0.3 \sin(2000\pi t)\text{V}$

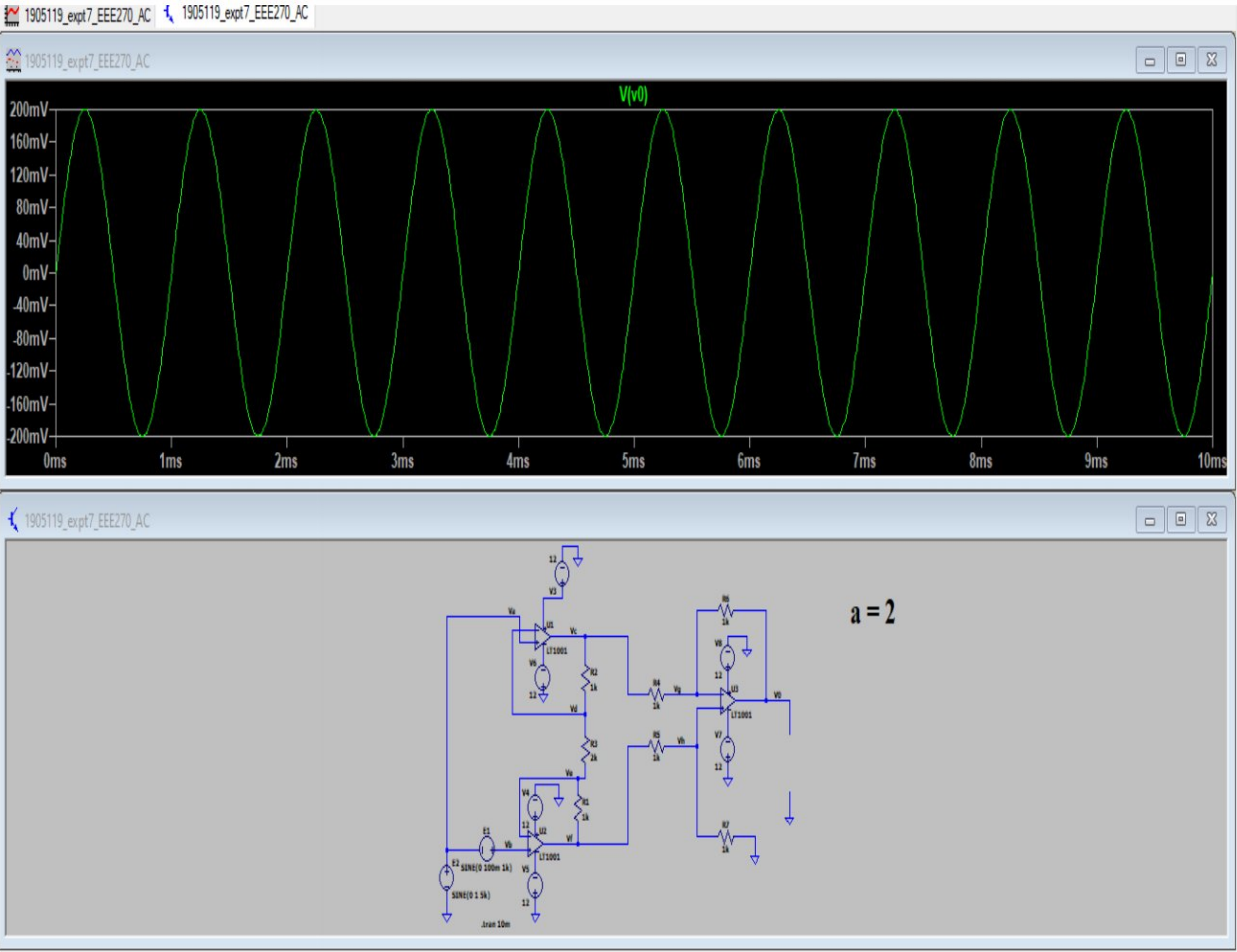


Figure 10: For values $V_1 = 0.1 \sin (2000\pi t)$ V, $V_2 = \sin (10^4 \pi t)$ V and $a = 2$, $V_{out} = 0.2 \sin (2000\pi t)$ V