# Op-Amp Practice Problems
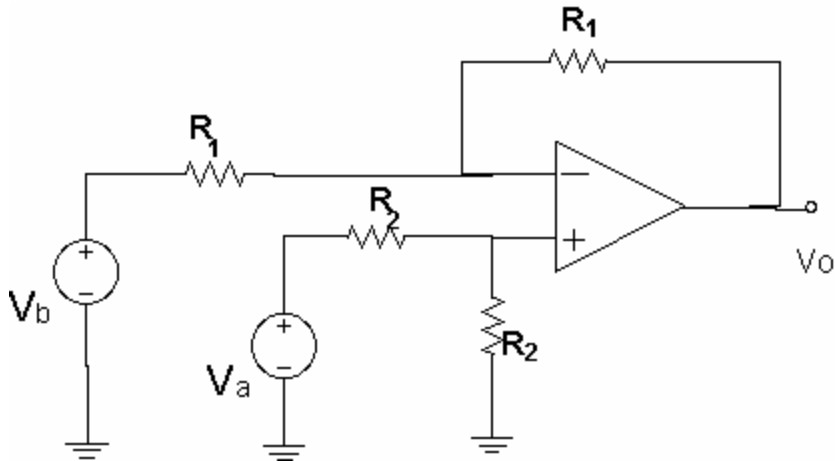
## Solutions

Problem 1:



Problem 2:

$R_f$ = 2.24 K saturates the amplifier at VO = 18 V; impossible to saturate amplifier at VO = -9 V (would require negative $R_f$)

Problem 3:

If using ideal op-amp, $R_T$=0 (leave gain as A and take limit towards infinity)

If using op-amp non-ideal (realistic) equivalent circuit, very complicated.

$R_T = 20/(20*R_i*A+2*R_i*R_o+23*R_i+40*R_o+260)*R_i*(2*R_o+13)$