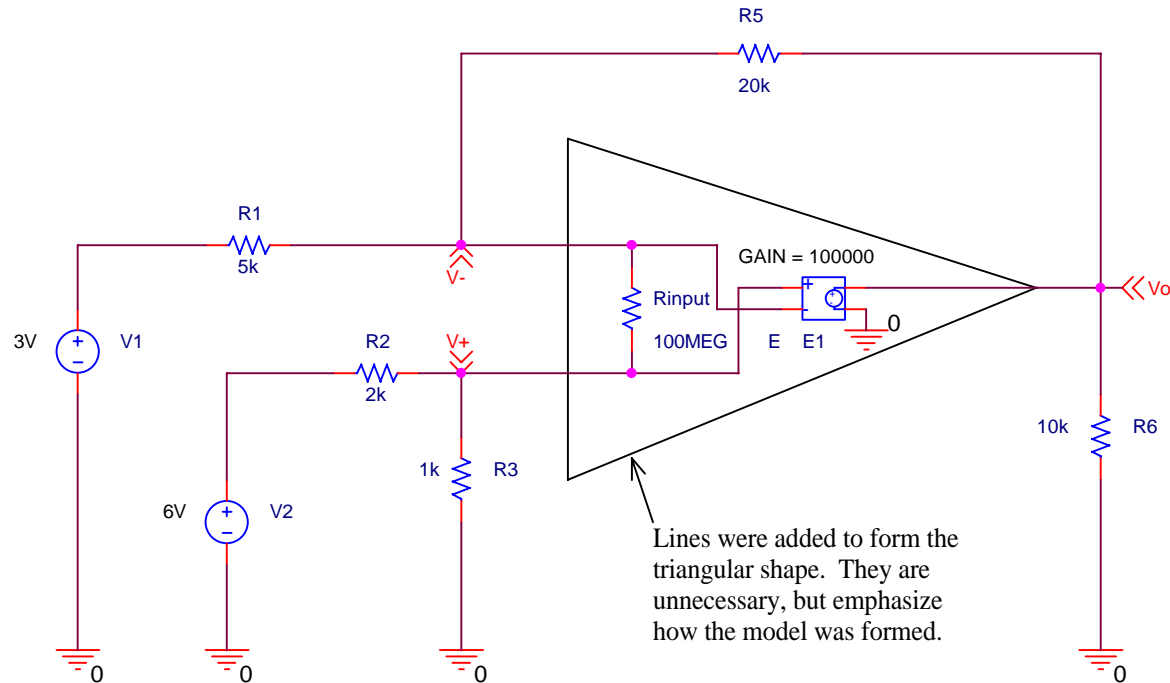


Operational Amplifier Circuit using an Ideal Op-amp Model

Purpose: Analysis of the op-amp circuit shown on the following page yields $V_o = -2V$. Use PSPICE to analyze the circuit using an ideal model to replace the op amp.

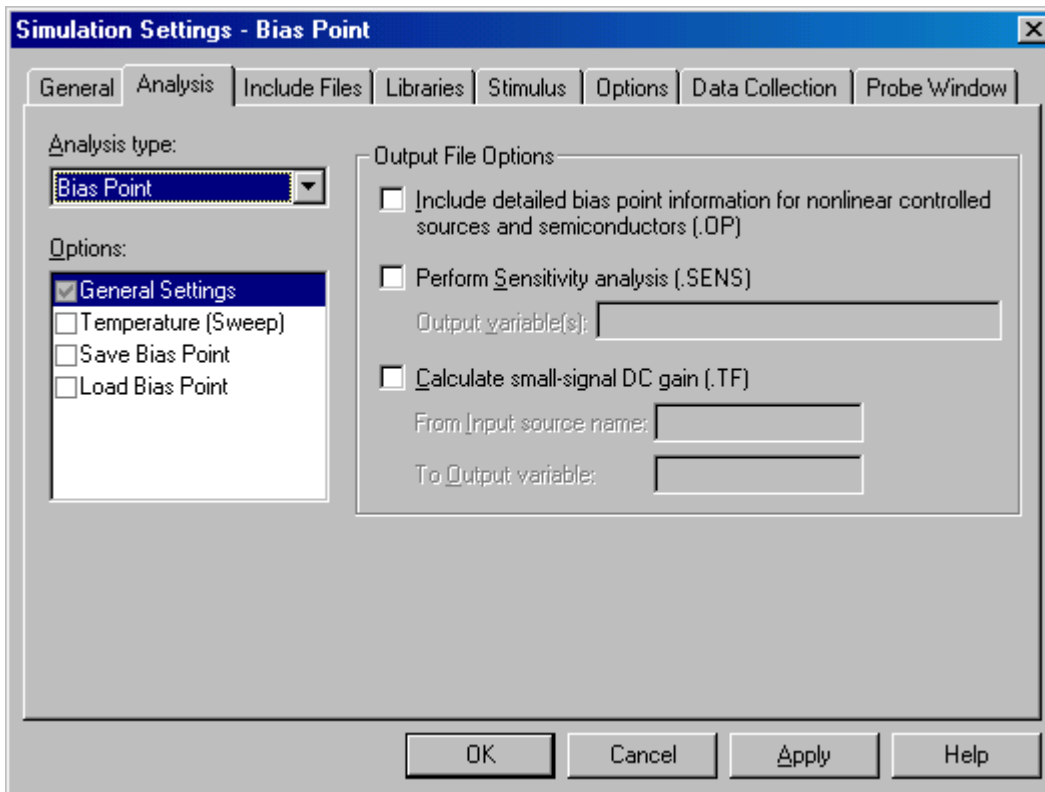
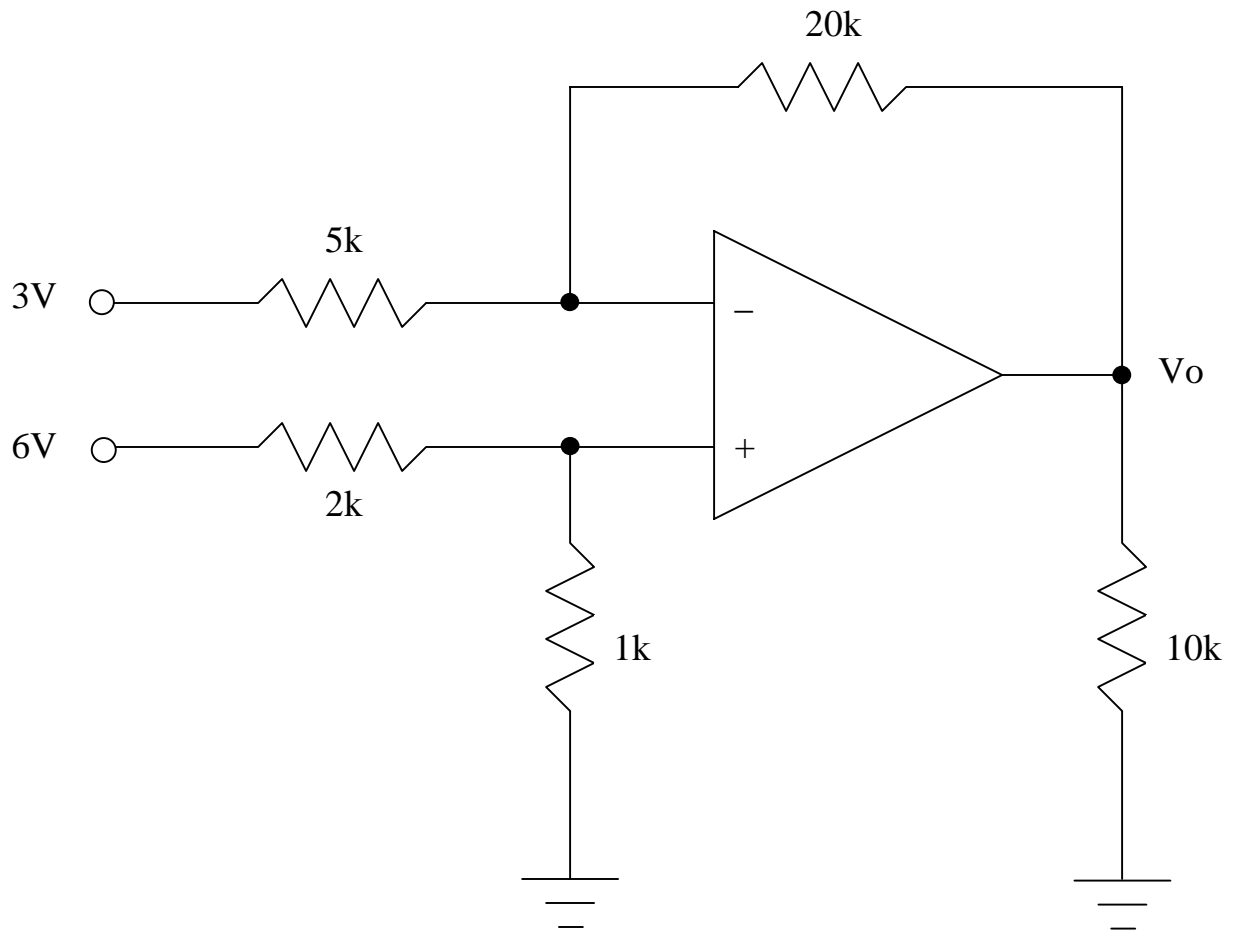
Analysis: Since only the output node voltage V_o is needed, a bias point analysis will be used.



Notes:

- 1) The near infinite input resistance of an op amp is modeled by $R_{input} = 100\text{MEG}$.
- 2) The near infinite voltage gain of an op amp is approximated by 100,000.

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Size	Document Number	Rev
A	<Doc>	<RevCode>
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**** 02/12/ 18:32:38 ***** Evaluation PSpice *****

** circuit file for profile: Bias Point

**** CIRCUIT DESCRIPTION

** WARNING: THIS AUTOMATICALLY GENERATED FILE MAY BE OVERWRITTEN BY SUBSEQUENT PROFILES

*Libraries:

* Local Libraries :

* From [PSPICE NETLIST] section of pspiceev.ini file:

.lib nom.lib

*Analysis directives:

.PROBE

.INC "op amp - ideal-SCHEMATIC1.net"

**** INCLUDING "op amp - ideal-SCHEMATIC1.net" ****

* source OP AMP - IDEAL

V_V1 N00123 0 DC 3V AC 1Vac

V_V2 N00117 0 DC 6V AC 1Vac

R_R1 N00123 V- 5k

R_R2 N00117 V+ 2k

R_R3 0 V+ 1k

R_Rinput V+ V- 100MEG

R_R5 VO V- 20k

E_E1 VO 0 V+ V- 100000

R_R6 0 VO 10k

.END

**** 02/12 18:32:38 ***** Evaluation PSpice *****

** circuit file for profile: Bias Point

**** SMALL SIGNAL BIAS SOLUTION TEMPERATURE = 27.000 DEG C

NODE	VOLTAGE	NODE	VOLTAGE	NODE	VOLTAGE	NODE	VOLTAGE
(V+)	2.0000	(V-)	2.0000	(VO)	-1.9999	(N00117)	6.0000

(N00123)	3.0000	So Vo = -1.9999V
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VOLTAGE SOURCE CURRENTS

NAME CURRENT

V_V1 -2.000E-04

V_V2 -2.000E-03

TOTAL POWER DISSIPATION 1.26E-02 WATTS

JOB CONCLUDED

TOTAL JOB TIME .27