

**EE43/EE100 — PRELAB #4**  
**Op Amps**

Name: \_\_\_\_\_

TA: \_\_\_\_\_

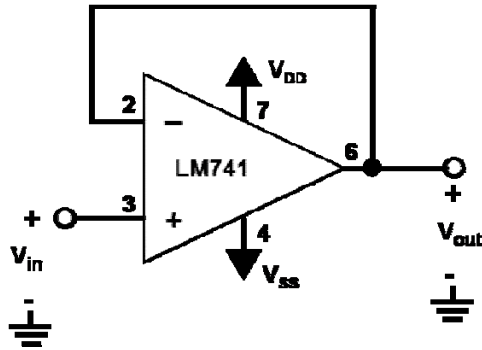
Section: \_\_\_\_\_

**Problem 1:**

What are the assumptions made for an ideal op amp (name at least 3)? In a real-world op amp, are these assumptions valid?

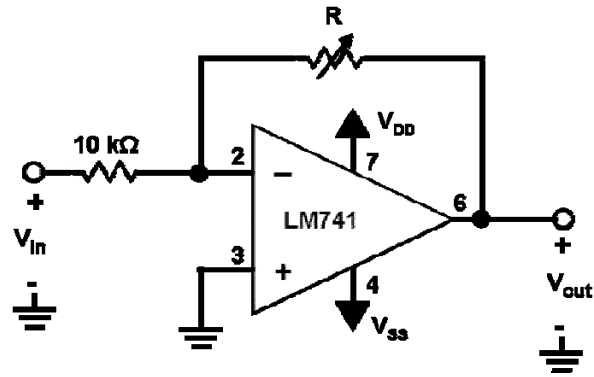
**Problem 2:**

What is the name of the circuit shown below? What is the relationship between  $v_{in}$  and  $v_{out}$ ? Why is this circuit useful?



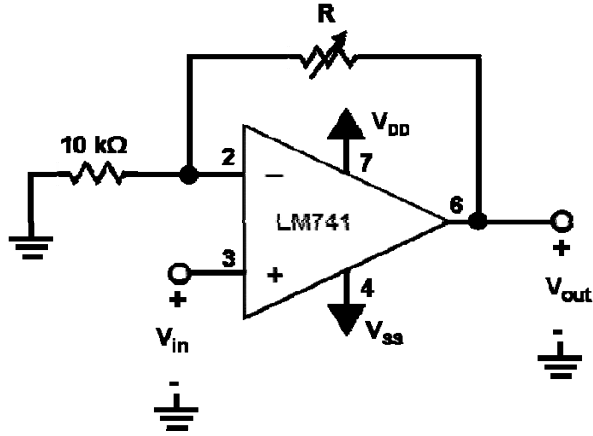
**Problem 3:**

In the circuit below,  $R = 20\text{k}\Omega$ , and  $v_{in} = 1\text{V}$ . What is the gain of this circuit? What is  $v_{out}$ ? If  $R = 50\text{k}\Omega$  and  $v_{in} = 1\text{V}$ , what is the gain of the circuit, and what is  $v_{out}$ ?



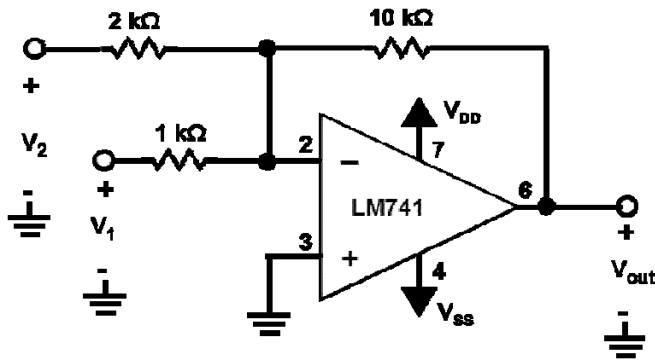
**Problem 4:**

In the circuit below,  $R = 20\text{k}\Omega$ , and  $v_{in} = 1\text{V}$ . What is the gain of this circuit? What is  $v_{out}$ ? If  $R = 50\text{k}\Omega$  and  $v_{in} = 1\text{V}$ , what is the gain of the circuit, and what is  $v_{out}$ ?



**Problem 5:**

In the circuit below, use superposition to find the value of  $v_{out}$ . Assume  $v_1 = v_2 = 0.5\text{V}$ .



**Problem 6:**

In the circuit below, if  $v_1 = 5V$  and  $v_2 = 1V$ , what is  $v_{out}$ ? What is the gain of this circuit?

