- Construct and model a temperature control system.

1. Construct the following circuit.
2. Model the system (from voltage input to temperature difference output).
3. Attach (tape) the temperature sensor to the light bulb.
4. Select R1 such that with a 3V input, the voltage across the bulb is 8V.
5. Let the bulb settle to the ambient temperature. Take note of the ambient temperature.
6. Be ready to record the bulb temperature at exactly 1 minute intervals.
7. Apply a 3V input. Start recording the temperature.

8. Plot the bulb temperature vs. time. Plot difference between bulb temperature and ambient temperature vs. time.

9. Fit your derived model to the collected data. What are the constants in your model?