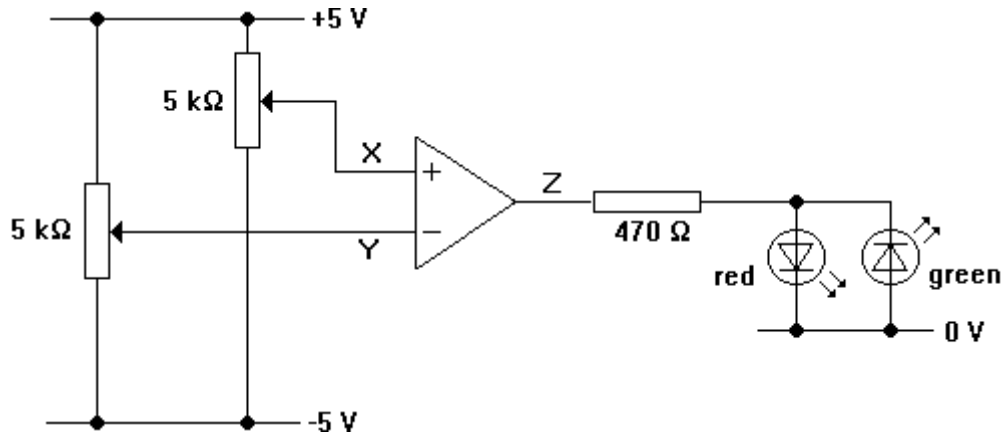


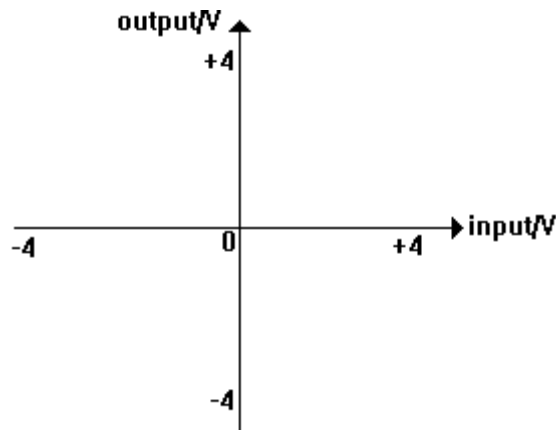
Exploring an op-amp

This experiment will help you unravel the behaviour of an operational amplifier (op-amp).

1. Assemble the circuit shown below. Use supply rails at +5 V, 0 V –5 V.



2. Use a voltmeter to measure the voltage at Z, the op-amp output. Vary the settings of the potentiometers until the red LED glows. Note the voltage at Z.
3. Measure the voltage at Z when the green LED glows.
4. Connect the voltmeter to X. Set X to +1.5 V. Connect the voltmeter to Y. Slowly raise Y from -4 V to +4 V. Note the voltage at which the op-amp output changes.
5. Use your observations to plot a graph of the voltage at Z (vertical) against the voltage at Y for X at +1.5 V. Set out the axes as shown below. You should be able to draw it out of three lines (two horizontal and one vertical).



6. Repeat 4 and 5 for X set at 0.0 V and -1.5 V.