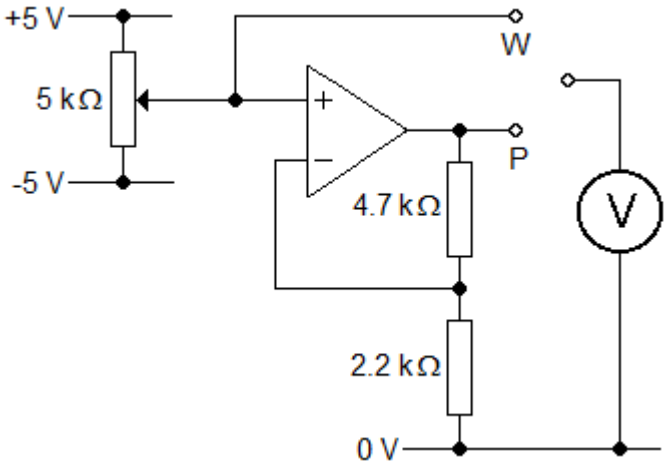
Non-inverting amplifier

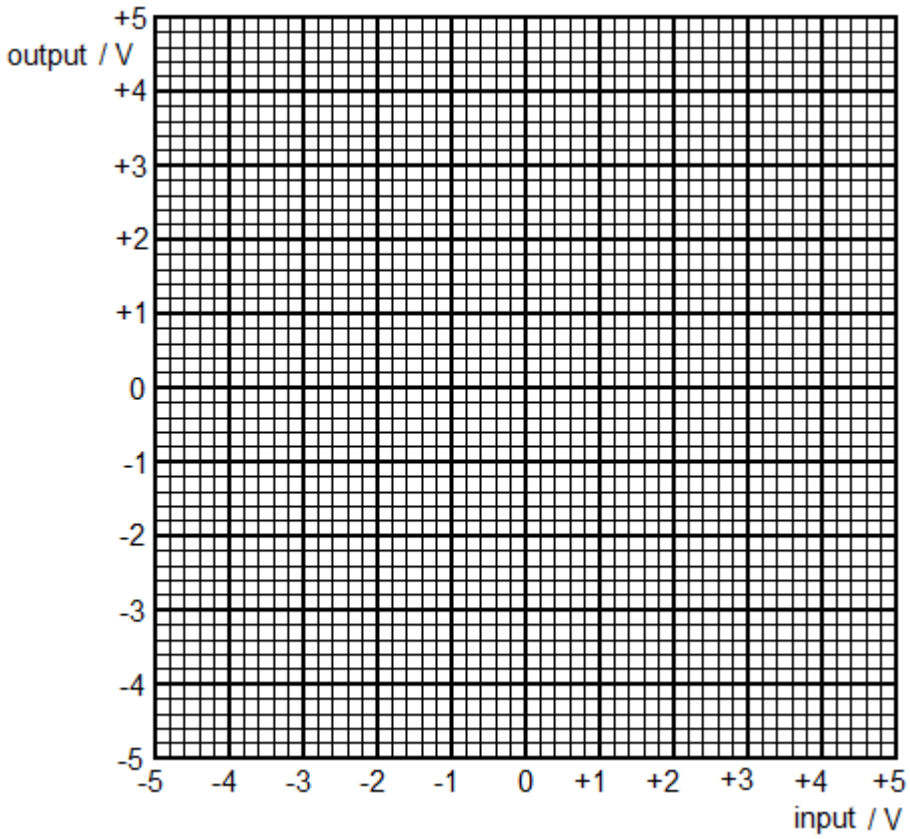
You are going to measure the voltage gain of a non-inverting amplifier.

1 Assemble this circuit.

2 Connect the voltmeter to W. Check that the voltage at the input of the amplifier V_{in} can be varied from +5 V to -5 V.

3 Set V_{in} to +3.0 V. Measure the voltage at P, V_{out}. Use these values of V_{in} and V_{out} to plot a point on these graph axes.





4 Reduce the voltage at V_{in} by 0.5 V, measure V_{out} and plot another point on the graph. Repeat until V_{in} reaches -3.0 V. Join the points with three straight lines. Label the linear region and the two regions of saturation.

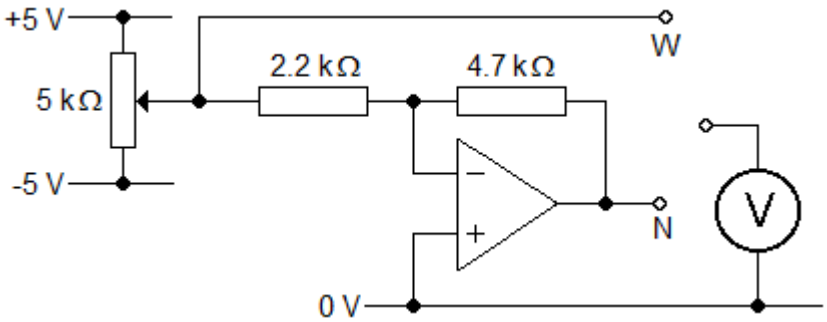
5 Use the value of V_{in} for V_{out} = +2 V to find the voltage gain of the amplifier. How well does it agree with the value calculated from the formula $G = 1 + \frac{R_t}{R_b}$?

Inverting amplifier

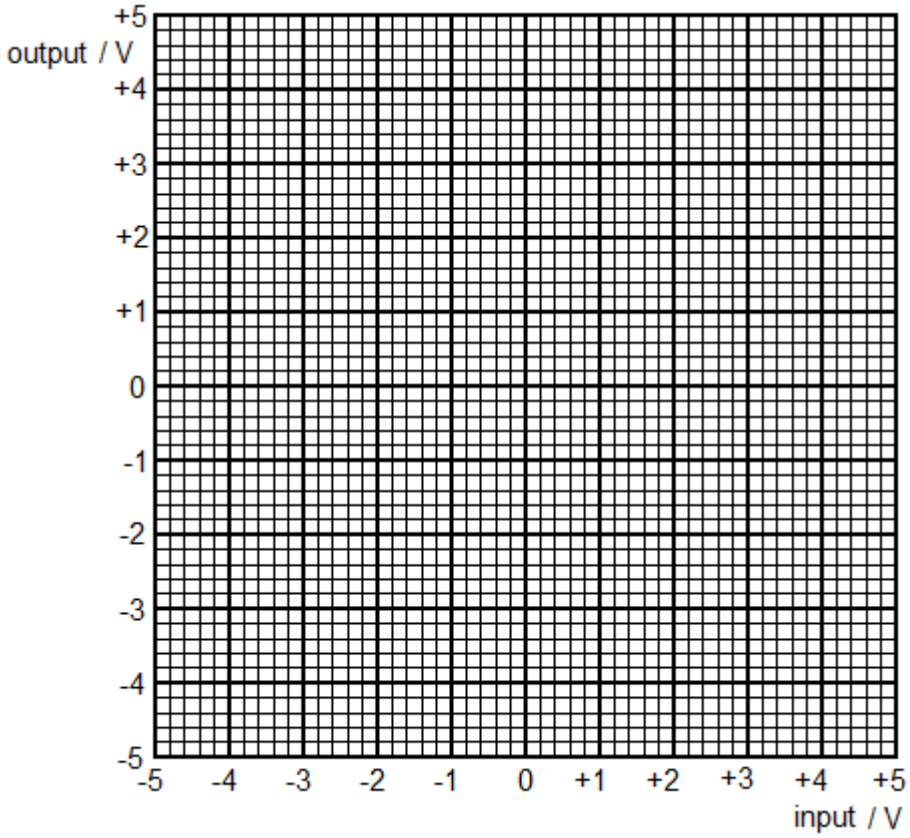
You are going to measure the voltage gain of an inverting amplifier.

1 Assemble this circuit.

2 Connect the voltmeter to W. Check that the voltage at the input of the amplifier V_{in} can be varied from +5 V to -5 V.



3 Set V_{in} to +4.0 V. Measure the voltage at N, V_{out}. Use these values of V_{in} and V_{out} to plot a point on these graph axes.



4 Reduce the voltage at V_{in} by 0.5 V, measure V_{out} and plot another point on the graph. Repeat until V_{in} reaches -4.0 V. Join the points with three straight lines. Label the linear region and the two regions of saturation.

5 Use the value of V_{in} for V_{out} = +2 V to find the voltage gain of the amplifier. How well does it agree with the value calculated from the formula $G = -\frac{R_f}{R_{in}}$?