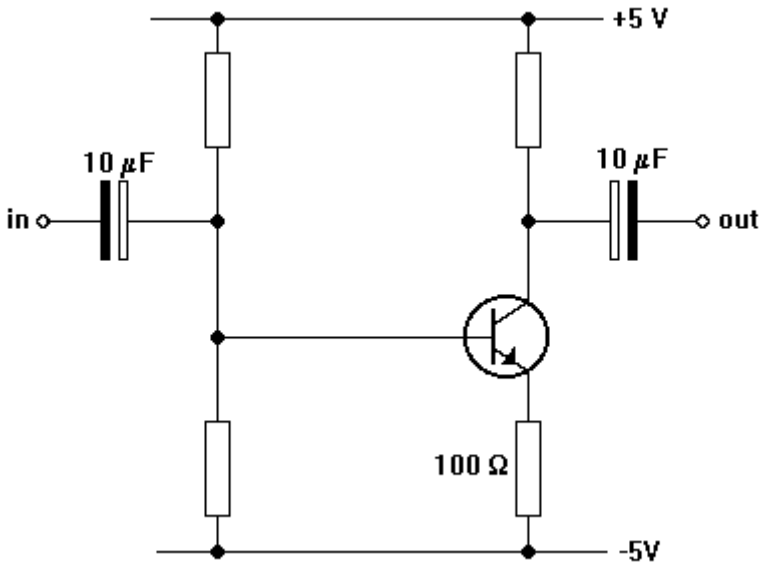
Designing an emitter-biased amplifier

Your task is to design an amplifier similar to the one shown below.



The amplifier must have the following specifications:

a voltage gain of -5

operate off supply rails at +5 V and -5 V

have an emitter resistor of 100

use transistors with a current gain of at least 100

1 Do all of the design calculations.

2 Assemble the circuit.

3 Test it with a 1 kHz sine wave of peak value 500 mV.

4 Record sketch waveforms of the signals at the base, emitter and collector of the transistor. Use them to measure the voltage gain of the amplifier.

5 Verify that replacement of the transistor with others does not significantly alter the operation of the amplifier circuit.