The circuit of Fig. 1 provides a gain of 1. Q1 and Q2 are each a 2N2222 transistor

Choose R2 so that Vo=7.5V

Create a small signal model for the amplifier and from the model calculate exact values for the gain and the impedences Zbb and Zo.

In each transistor Ic = \( \beta_F I_B (1 + V_{CE}/V_{AF}) \)

where \( \beta_F = 250, V_{AF} = 75V \)

Simulate the amplifier to check your results.

Note: \( \beta = \beta_F (1 + V_{CEQ}/V_{AF}) \) \( r_o = (V_{AF} + V_{CEQ})/I_{CQ} \) \( r_t = \beta (26mv/I_{CQ}) \)

An alternate circuit with a gain of 1 is shown in Fig. 2. Simulate this amplifier and compare the simulation results with the results of the simulation results for the circuit of Fig. 1.