A PNP BJT common-emitter inverting amplifier is shown. Assume the parameters of the transistor are $\beta_F = 50$, $V_T = 25$ mV, and $V_A = 100$ V. (a.) Find the small signal model parameter values for $g_m$, $r_\pi$, and $r_o$ (ignore $V_{EC}$ in the calculation of $r_o$). (b.) Find an algebraic expression for the small signal voltage gain, $v_{out}/v_{in}$, the input resistance, $R_{in}$, and the output resistance, $R_{out}$. (c.) Numerically evaluate the small signal voltage gain, $v_{out}/v_{in}$, the input resistance, $R_{in}$, and the output resistance, $R_{out}$.