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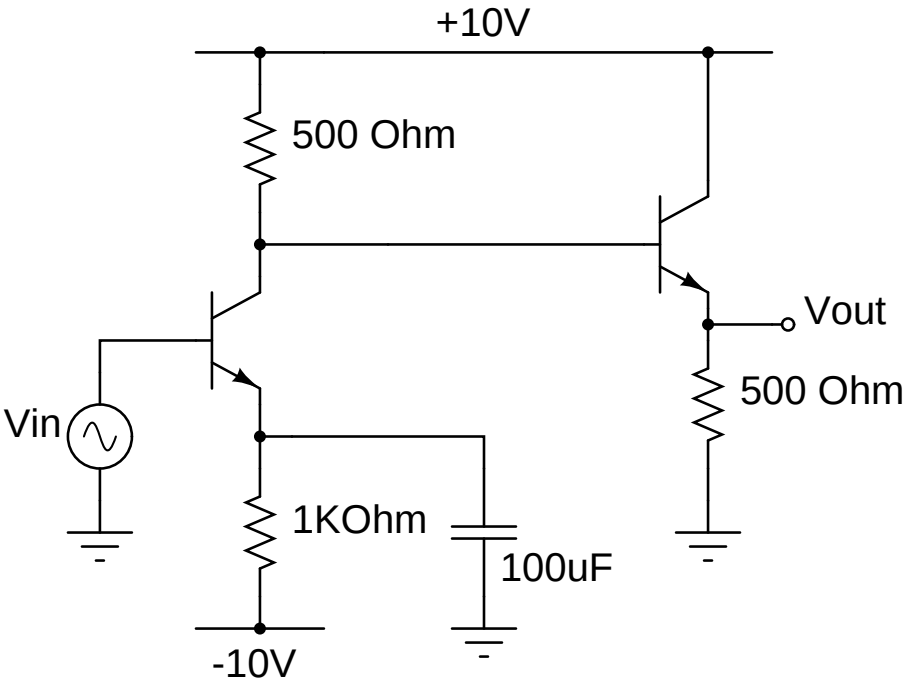
No. Estudiante _____

Electrical and Computer Engineering Department
University of Puerto Rico - Mayaguez, P.R.
Electronics II - Spring 1999 - First Exam - Prof. Manuel Toledo



For the above circuit $\beta = 200$, $g_m = 0.372A/V$, $r_\pi = 537\Omega$, $r_b = 50\Omega$ for both transistor. The first stage's transistor high frequency caps are $C_\pi = 100pF$ and $C_\mu = 5pF$. The second transistor has very small C_π and C_μ that can be ignored. The voltage source is ideal (i.e. $R_{TH} = 0$. Determine the following:

1. equivalent a.c. circuits for low and high frequencies (5 pts. ea.)
2. mid-frequency voltage gain, $A_{MID} = \frac{V_{out}}{V_{in}}$ (10 pts)
3. low frequency pole and zero, ω_L and ω_Z respectively (in radians per second) (10 pts. ea.)
4. Miller's gain K associated with C_μ (10 pts)
5. high frequency equivalent capacitances. Use Miller's theorem. (10 pts)
6. high frequency poles ω_{H1} and ω_{H2} (in radians per second) (10 pts. each)
7. high frequency dominant pole ω_H (in radians per second) (10 pts)
8. an expression for the gain as a funtion of s, valid for low, mid- and high frequencies (10 pts)