

Homework Set 7 due Monday 04/16/07

1. 50 points

- a) (25 points) Rework Problem 1 of the midterm and for its circuit
- b) (25 points) plot the poles & zeros of  $Y(s)$  and from them give the impulse response,  $y_{\delta}(t) = i_{in}(t)$  when  $v_{in}(t) = \delta(t) =$  unit impulse. Comment on why  $y_{\delta}(t)$  is useful and valid even though  $\delta(t)$  is not a small signal.

2. 50 points

- a) (25 points) Rework Problem 2 of the midterm and for its circuit
- b) (25 points) keeping  $V_{TOn} = -V_{TOp} = 1V$ , obtain the expression for  $I_{out}$  versus  $V_{out}$  = voltage of the drain with respect to ground of the output transistor (right hand  $M_n$ ) for  $-5V \leq V_{out} \leq 5V$ . From that expression sketch (by hand)  $I_{out}$  versus  $V_{out}$ , labeling important points.