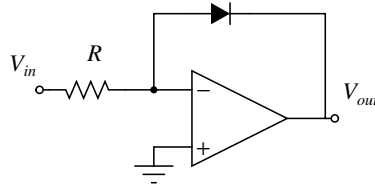
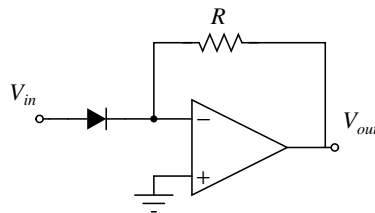


Indian Institute of Technology, Delhi
EEL 204: Analog Electronic Circuits
Tutorial 1, January 11, 2011

1. A diode has $I_s = 10 \text{ nA}$. What will be the resistance looking into the diode when the voltage across the diode is 0.5 V ? Assume $\eta=1$.
2. Evaluate the performance of the following two circuits:

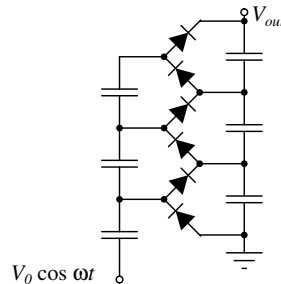


(a)



(b)

3. Evaluate the performance of the following circuit. All capacitors are of equal size.



4. A certain three-terminal device has been invented. The three terminals of this device are named A, B, and C. The device behaves in the following fashion:

$$I_C = \alpha \cdot V_{AC}^2 / I_B \cdot (1 + \beta / I_B \cdot V_{AC})$$

$$V_{BC} = \gamma \cdot e^{V_{AC} / I_B^\delta} \cdot I_B$$

What are the units of α , β , γ , δ , respectively? Develop a small signal model for this device.