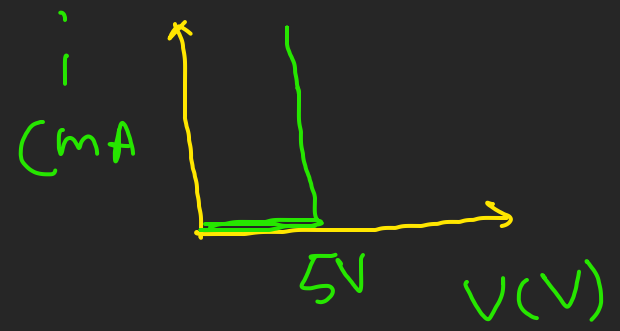
Example 1

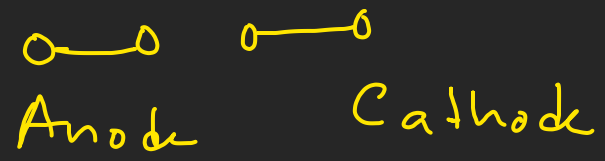


Step 1

Device model:

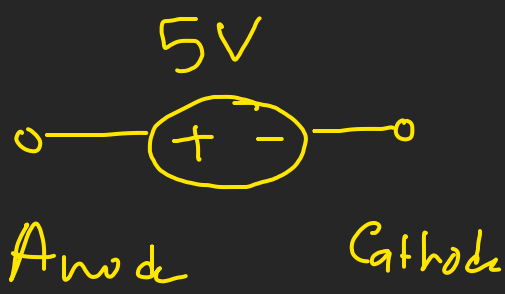
Region A: $V \leq 5V$,

open circuit,



Region B: $V > 5V$

Voltage source:



Step 2

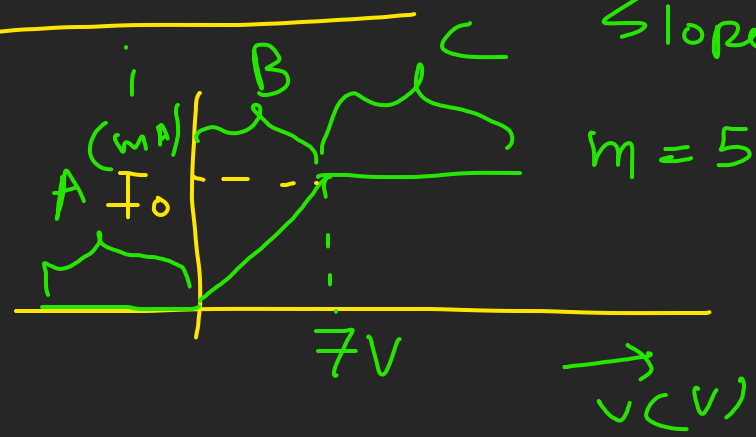
Device parameters:

Region A: no parameters

Region B: $V_o = 5V$

— x —

Example 2



Slope = m

m = 5

Step 1

A: Anode, C: Cathode } Not the regions!

Device Model:

Region A: $V \leq 0V$; open circuit

Region B: $0 < V \leq 7V$; Resistor

Region C: $V > 7V$; Current source

Step 2:

Device Parameters:

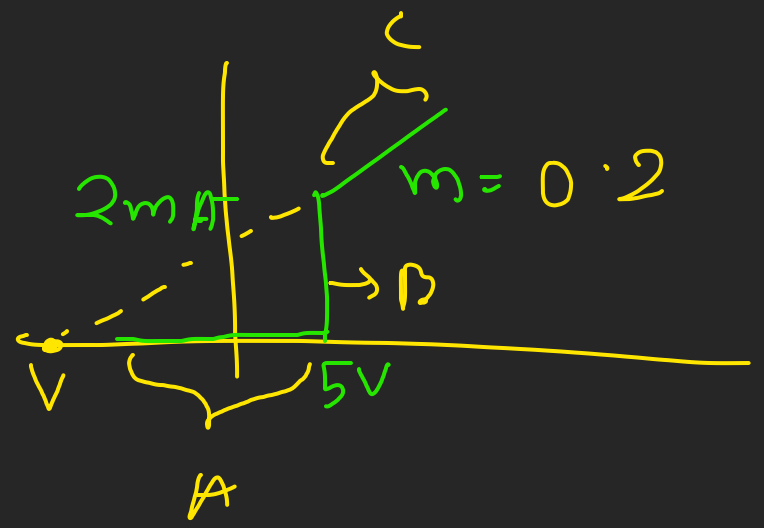
A: N/A

B: $R = 1/m = 0.2\ k\Omega$

C: $y = mx$; (from B)

$\Rightarrow I_0 = m \times (7V) = 35\ mA$

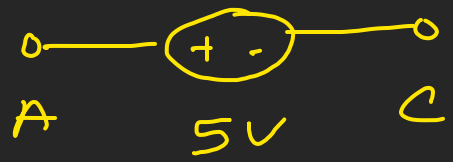
Example 3



1) Device Model:

A: $V \leq 3V$; 

B: $0 < i \leq 2mA$; Voltage source



C: $V > 5V$; Two possible model:

i)

ii)

2) Device Parameters :

A : No parameters can be found !

B : $V_0 = 5V$

C : Equation for this region : $y = mx + c$ (y: current, m: slope, x: voltage, c: I_0)

At 5V, the current is 2 mA.

$\therefore \quad 2 = (0.2 \times 5) + c$

$\Rightarrow C = (2 - 1)\,mA = 1\,mA$

$I_0 = 1\,mA, \quad R = 1/m = 5k\Omega$

at V_0, $i = 0$

$y = mx + c$

$\Rightarrow 0 = 0.2x + 1$

$\Rightarrow x = -5V = V_0$

Method of Assumed Stats: