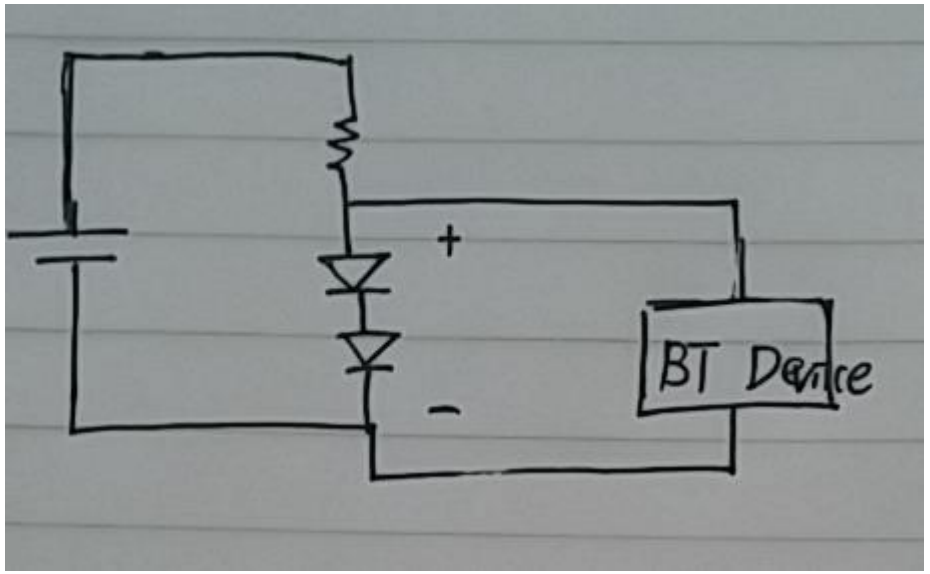
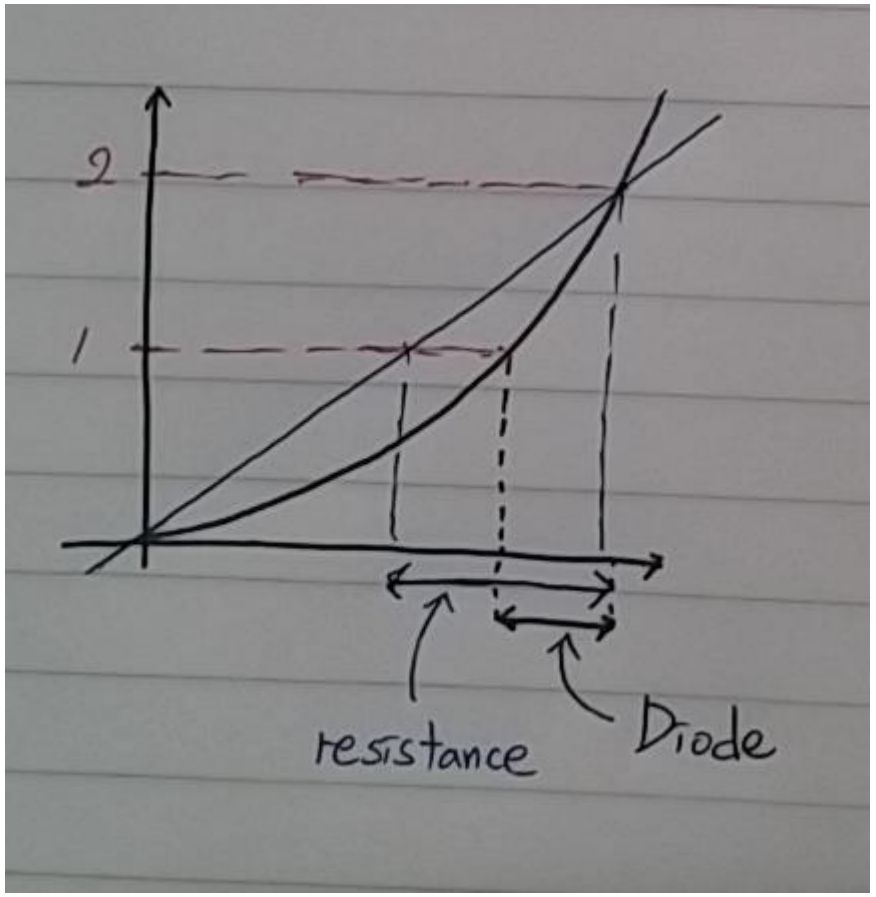
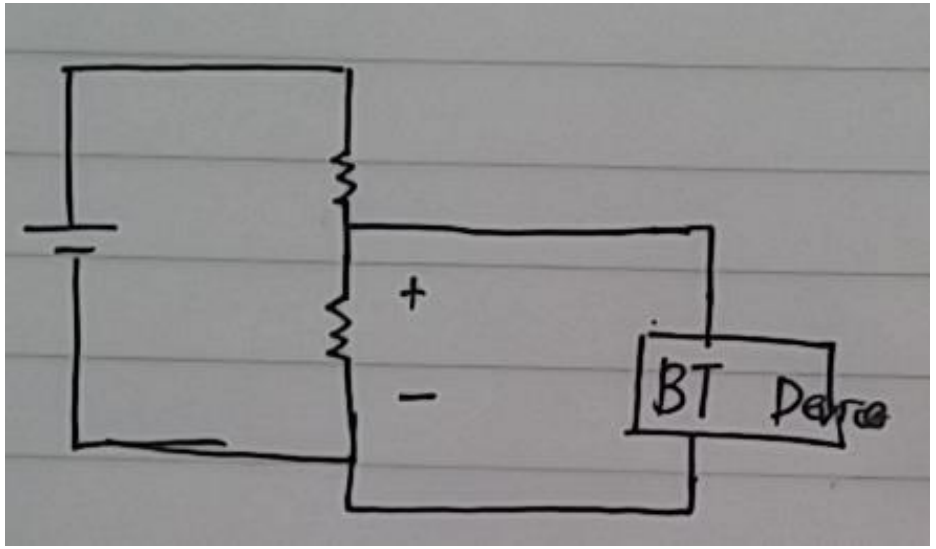
Lec 7

2009142050 이진배

1. Why use Diode, why not Registant ?







The voltage across each diode is a weak function of its current.

1. Why use Diode, why not Registant?

- The voltage across each diode is a weak function of its current.

  The diodes operate as a simple voltage regulator.

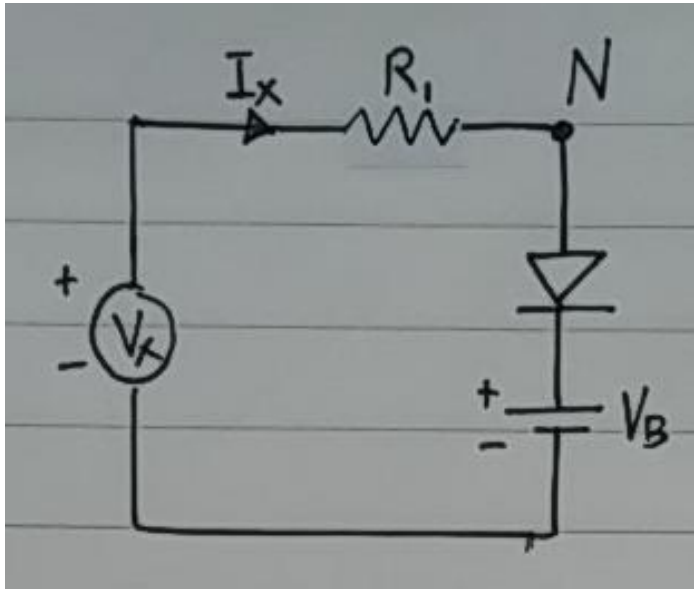
2. Principle of Diode Circuit Analysis

1. Begin by assuming certain states for all diodes check the final result against these assumptions.

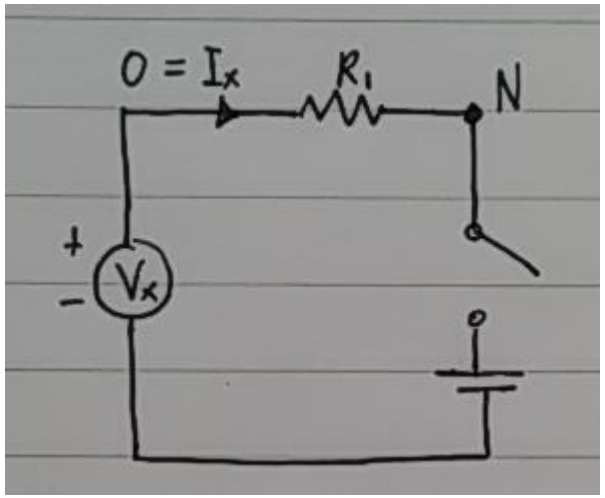
2. If a diode is about to turn on or off, it must sustain a voltage of $V_{D,on}$ but its current is small.

3. If a diode is on and carries a current the current must flow from the anode to the cathode.

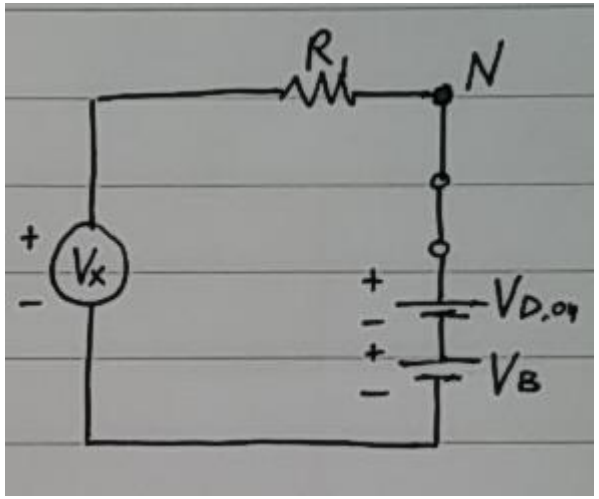
Example 1



Reverse bias



Forward bias



Find Vx1

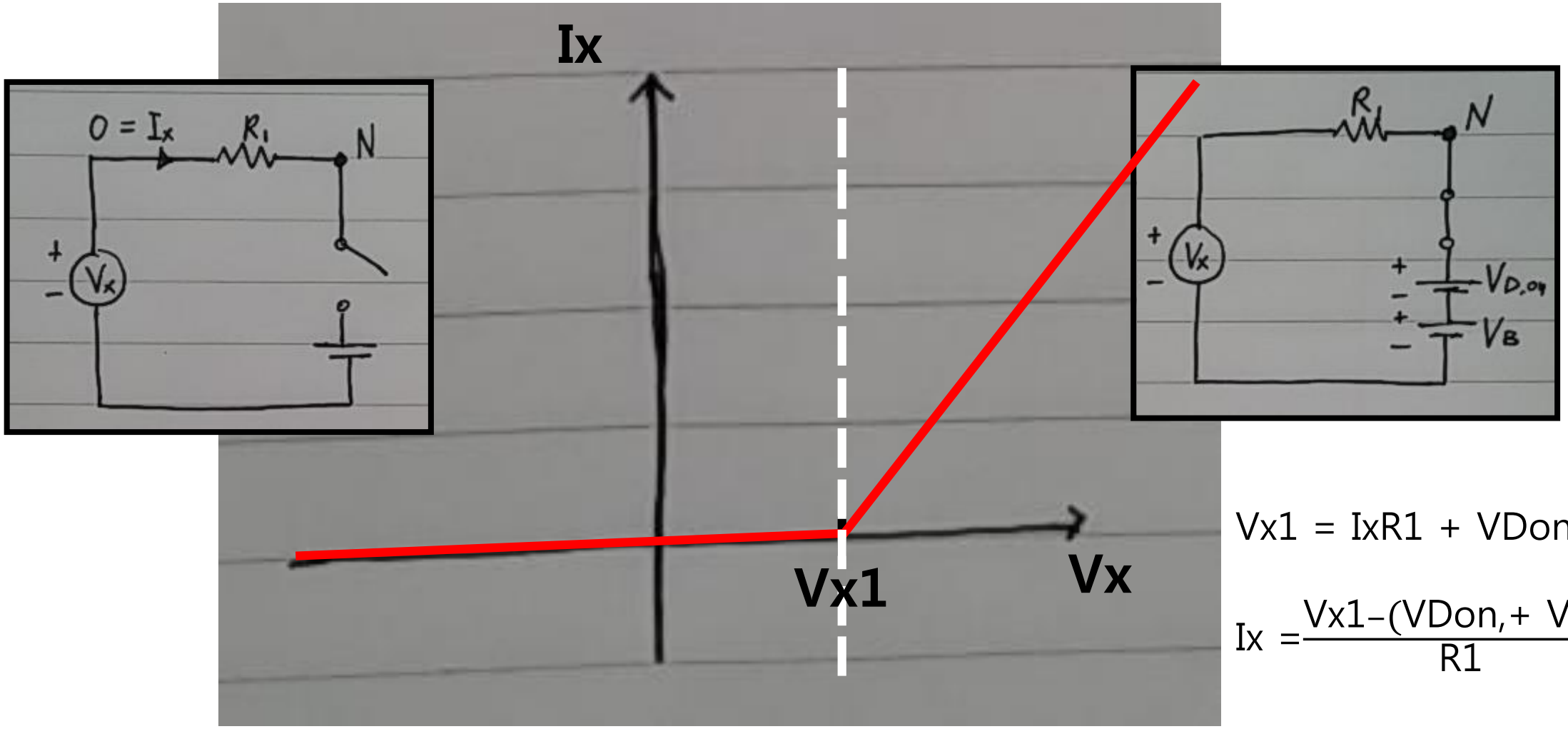
Vx1 = Point, diode turn on/off

Vx1 = IxR1 + VDon,+ VB

Because, Ix = 0 (principle 2)

$V_{x1} = V_{Don,} + V_B$

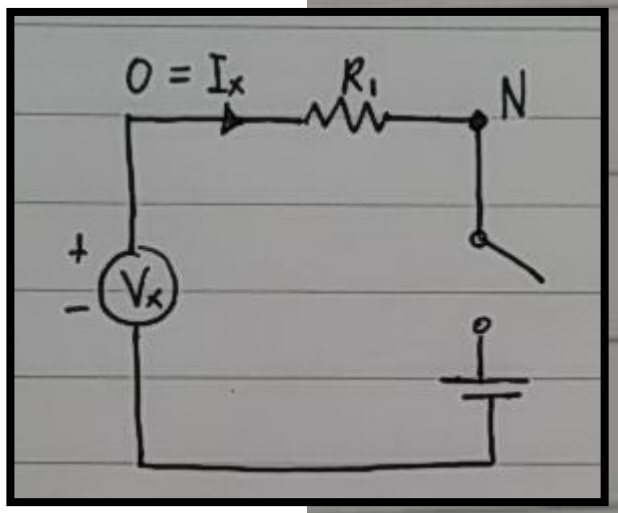
Example 1 : Ix – Vx graph

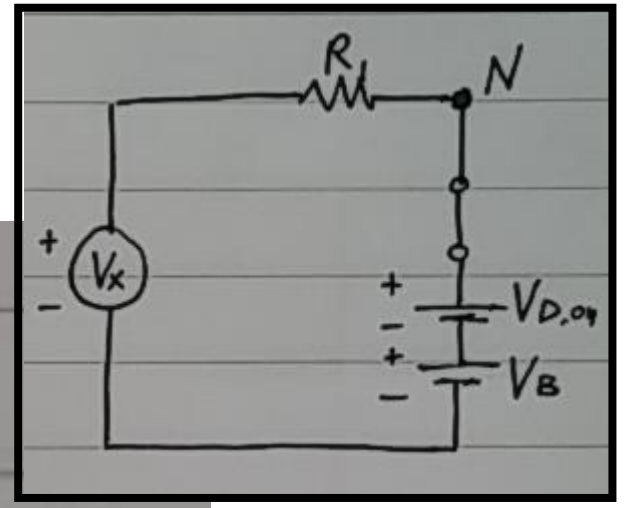


$$Vx1 = IxR1 + VDon,+ VB$$

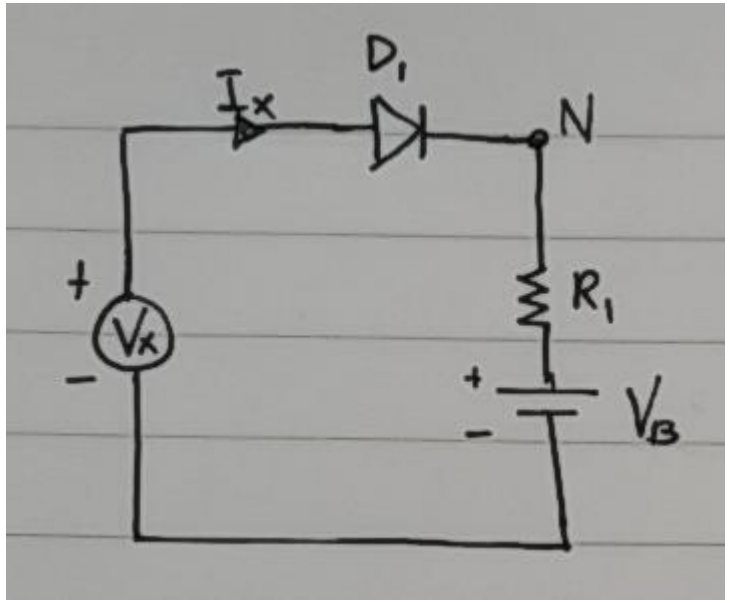
$$Ix = \frac{Vx1 - (VDon,+ VB)}{R1}$$

Example 1 : V_N – Vx graph

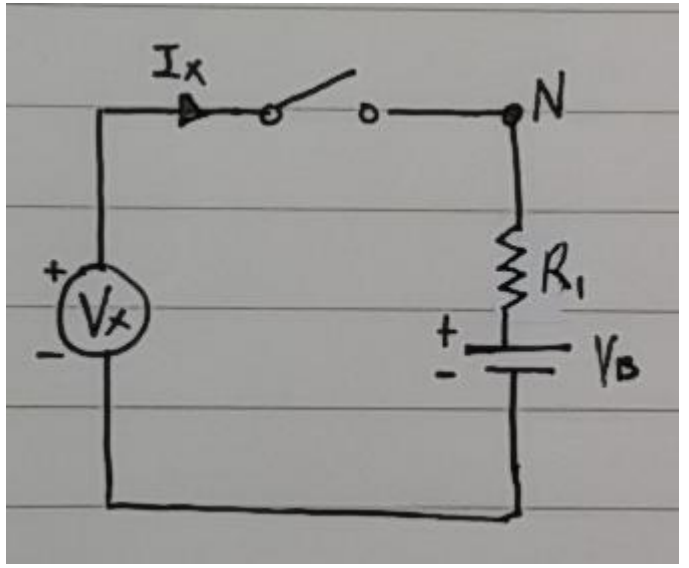




Example 2



Reverse bias



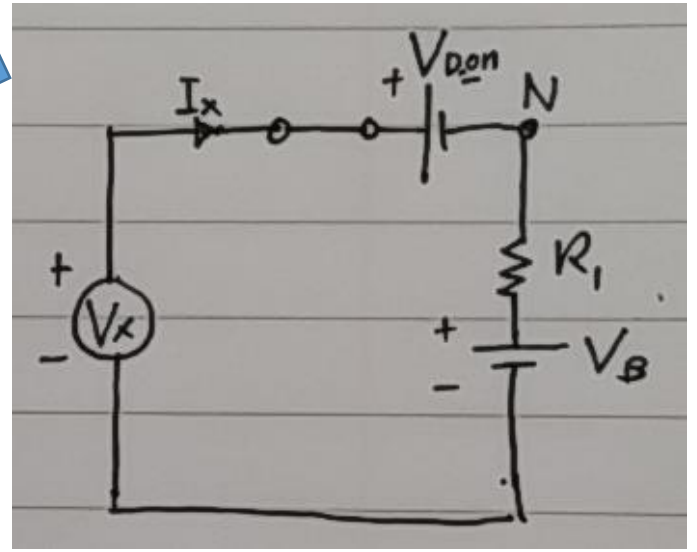
Find Vx1

Vx1 = Point, diode turn on/off

Vx1 = IxR1 + VDon,+ VB

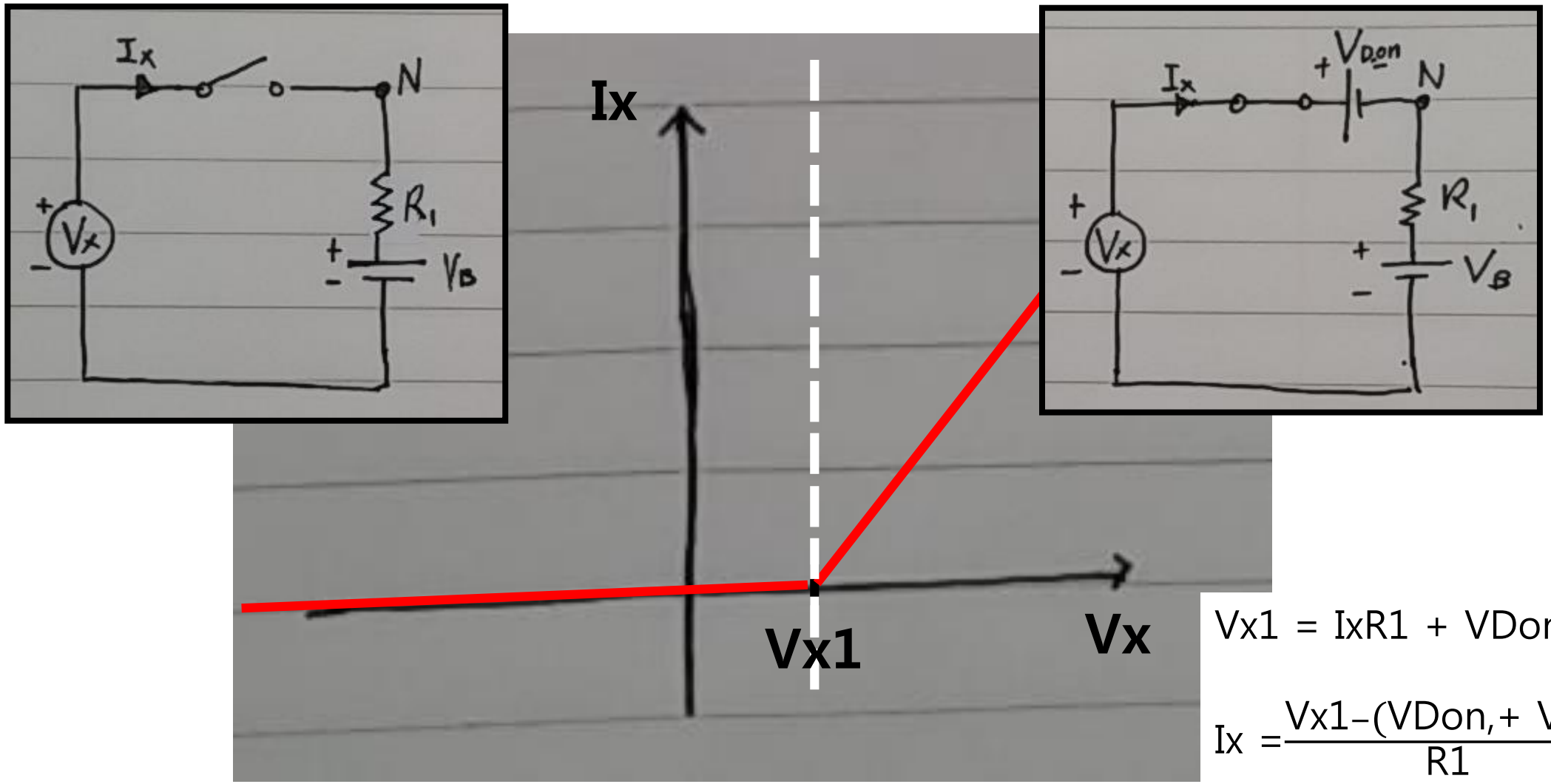
Because, Ix = 0 (principle 2)

Forward bias



$V_{x1} = V_{Don,} + VB$

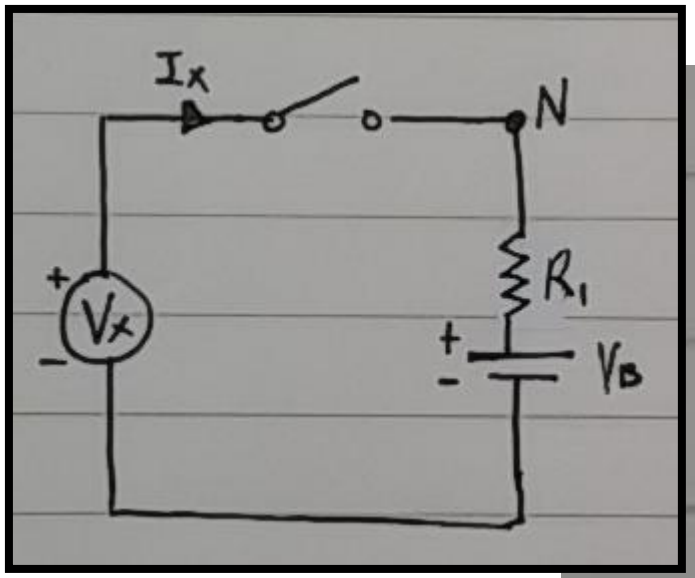
Example 2 : Ix – Vx graph

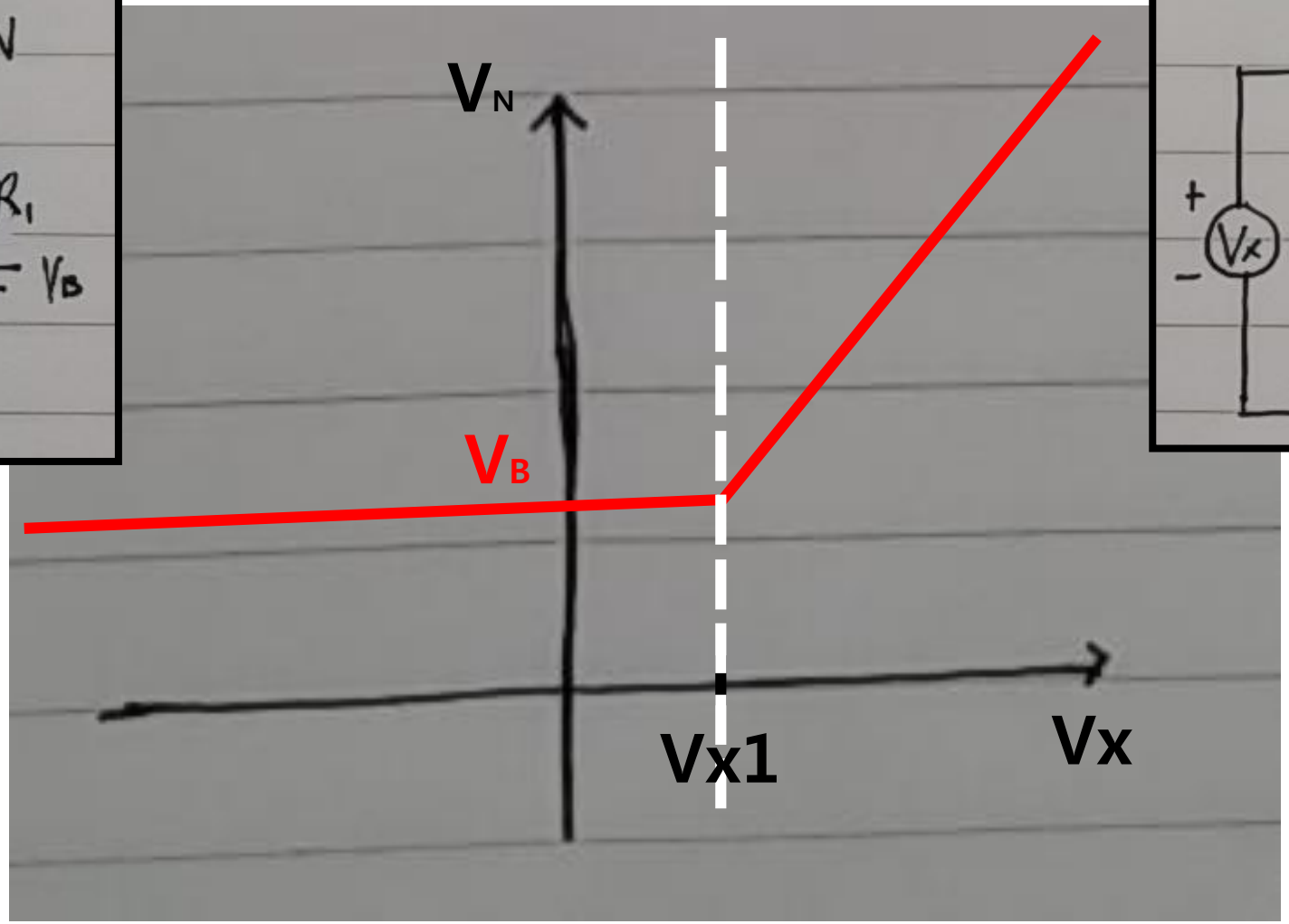


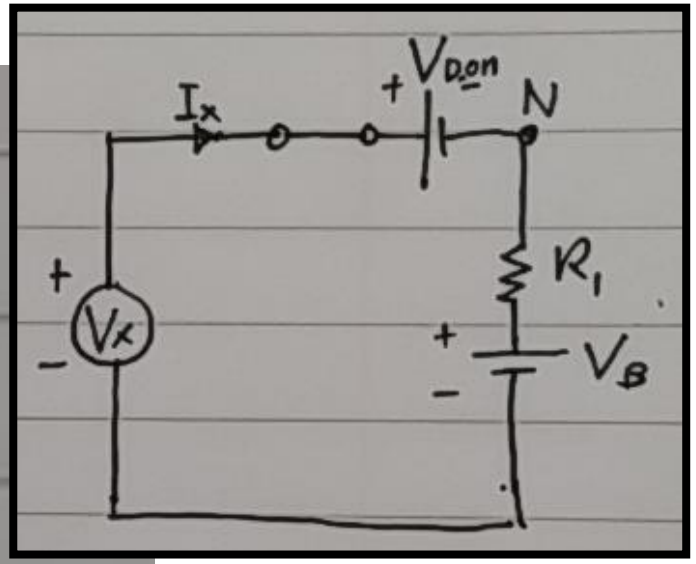
$$Vx1 = IxR1 + VDon,+ VB$$

$$Ix = \frac{Vx1-(VDon,+ VB)}{R1}$$

Example 2 : V_N – Vx graph







$-Vx + V_{D,on} + V_N = 0$

$V_N = Vx - V_{D,on}$

The End

Thank you