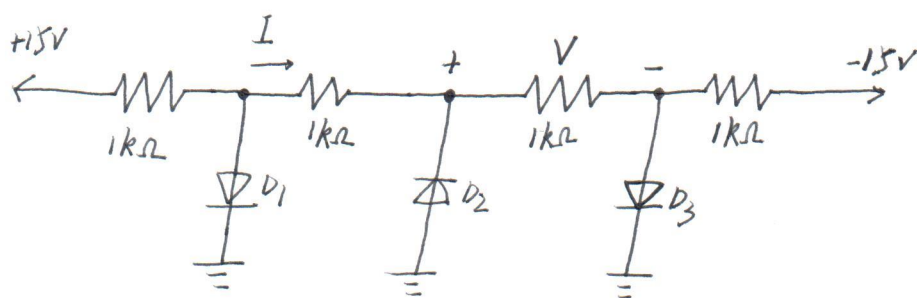1.1/
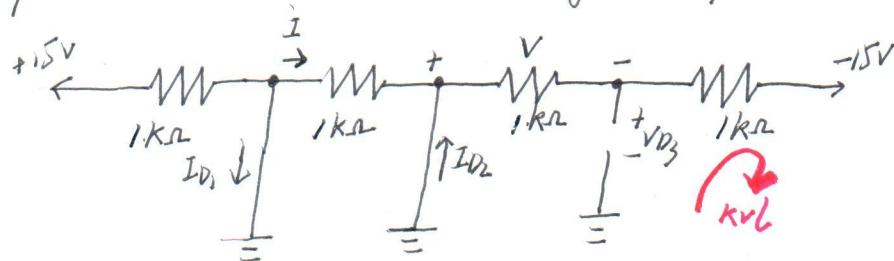
(a)



## SOLUTION

Step1: assuming that $D_1$ & $D_2$ are on and $D_3$ is off

Step2: with $D_1$ & $D_2$ on and $D_3$ off the equivalent circuit is shown below.



$$I_{D1} = 15V/1k\Omega = 15mA$$

$$I = (0-0)V/1k\Omega = 0A$$

$$I_{D2} = 15V/(1+1)k\Omega = 7.5mA$$

According to Kirchhoff's voltage law:

$$\begin{cases} V_{D3} = 1.k\Omega \times I_{D2} - 15v \\ I_{D2} = 7.5 \, mA \end{cases}$$

$$\therefore V_{D3} = -7.5V$$

$$V = 1k\Omega \times I_{D2} = 1.k\Omega \times 7.5mA = 7.5V$$

Step3:

$$I_{D1} = 15mA > 0$$

$$I_{D2} = 7.5mA > 0$$

$$V_{D3} = -7.5V < 0$$

$\therefore$ The assumption above is right, and $I = 0A$, $V = 7.5V$