$$-\frac{d}{dx}\left(E(x)\frac{dn(x)}{dx}\right)=0 \qquad E(x)=\begin{cases}3, & x\in[0,1)\\ 5, & x\in(1,2]\end{cases}$$

$$n(2)=0\ ;\ \frac{dn(0)}{dx}\cdot n(0)=10\ ;\ [0,2]\ni x\to n(x)\in\mathbb{R}$$

$$-E(x)\cdot\frac{d^2n(x)}{dx^2}\cdot v=0 \quad / \int_0^2 \qquad \frac{dn(0)}{dx}=10-n(0)$$

$$-\int_0^2 E(x)\frac{d^2n(x)}{dx}v\,dx=0$$

Alg. $L=-\left[E(x)\frac{dn(x)}{dx}v\right]_0^2+\int_0^2 E(x)\frac{dv}{dx}\frac{dn}{dx}dx=$

$$=-5\cdot n'(2)\cdot v(2)+3\cdot n'(0)\cdot v(0)+\int_0^2 E(x)\,v'n'\,dx$$

$n(2)=0 \Rightarrow v(2)=0$

$$3\left(10-n(0)\right)\cdot v(0)+\int_0^2 E(x)\,v'n'\,dx=0$$

$$\underbrace{\int_0^2 E(x)v'n'\,dx-3n(0)v(0)}_{B(n,v)}=\underbrace{-30\,v(0)}_{L(v)}$$