CAPÍTULO I.- LA EDO(1).

EDO(1) NL

$$M(x,y) + N(x,y)\frac{dy}{dx} = 0$$

$$\rightarrow F(x,y) = c_1 \qquad SG$$

EDO (1) L CV $\begin{cases} H \\ NH. \end{cases}$

$$\frac{dy}{dx} + p(x)\,y = q(x)$$

SG. $\Rightarrow$ $$y(x) = C_1 e^{-\int p(x)dx} + e^{-\int p(x)dx} \int e^{\int p(x)dx} q(x)\,dx.$$

1- EDO(1) LCV H.

$$\frac{dy}{dx} + p(x)\,y = 0$$

$$\frac{dy}{dx} = -p(x)\,y$$

$$\frac{dy}{y} = -p(x)\,dx$$

$$\int \frac{dy}{y} = -\int p(x)\,dx$$

$$Ly = -\int p(x)\,dx + LC_1$$

$$Ly - LC_1 = -\int p(x)\,dx$$

$$L\left(\frac{y}{C_1}\right) = -\int p(x)\,dx$$

$$\frac{y}{C_1} = e^{-\int p(x)dx}$$

SG H $\quad y = C_1 e^{-\int p(x)dx}$

EDO(1) LCV H. $\quad \frac{dy}{dx} + p(x)\,y = 0$

$$y(x) = c_1 e^{-\int p(x)\,dx}$$

$$y(x) = \frac{c_1}{e^{\int p(x)\,dx}}$$

$$e^{\int p(x)\,dx}\, y = c_1$$

$$F(x,y) = c_1$$

$$\frac{\partial F}{\partial x} + \frac{\partial F}{\partial y}\cdot\frac{dy}{dx} = 0$$

$$e^{\int p(x)\,dx}\cdot p(x)\,y + e^{\int p(x)\,dx}\cdot\frac{dy}{dx} = 0$$

$$e^{\int p(x)\,dx}\left(\frac{dy}{dx} + p(x)\,y\right) = 0$$

Factor Integrante. $e^{\int p(x)\,dx}\cdot y = c_1$

EDO(1) L cv NH.

$$\frac{dy}{dx} + p(x)\,y = q(x)$$

$$e^{\int p(x)dx}\left(\frac{dy}{dx} + p(x)\,y\right) = e^{\int p(x)dx} q(x)$$

$$\frac{d}{dx}\left(e^{\int p(x)dx} \cdot y\right) = e^{\int p(x)dx} q(x)$$

$$\int d\left(e^{\int p(x)dx} \cdot y\right) = \int e^{\int p(x)dx} q(x)\,dx$$

$$e^{\int p(x)dx} \cdot y = \int e^{\int p(x)dx} q(x)\,dx + C_1$$

$$y = C_1 e^{-\int p(x)dx} + e^{-\int p(x)dx} \int e^{\int p(x)dx} q(x)\,dx$$

EDO(1) L cv NH.

$$\frac{dy}{dx} = \frac{1}{x\cos(y) + \operatorname{Sen}(2y)} \qquad y(x)$$

$$\frac{dx}{dy} = x\cos(y) + \operatorname{Sen}(2y)$$

$$\frac{dx}{dy} - \cos(y)\cdot x = \operatorname{Sen}(2y) \qquad x(y)$$

$$p(y) = -\cos(y)$$

$$q(y) = \operatorname{Sen}(2y)$$

$$x\,Lx\,\frac{dy}{dx} - y = x^3(3Lx - 1)$$

$$\frac{dy}{dx} - \frac{y}{x\,Lx} = \frac{x^3(3Lx-1)}{x\,Lx}$$

$$= \frac{x^2(3Lx-1)}{Lx}$$

$$\frac{dy}{dx} - \frac{y}{x\,Lx} = 3x^2 - \frac{x^2}{Lx}$$

$$p(x) = -\frac{1}{x\,Lx}$$

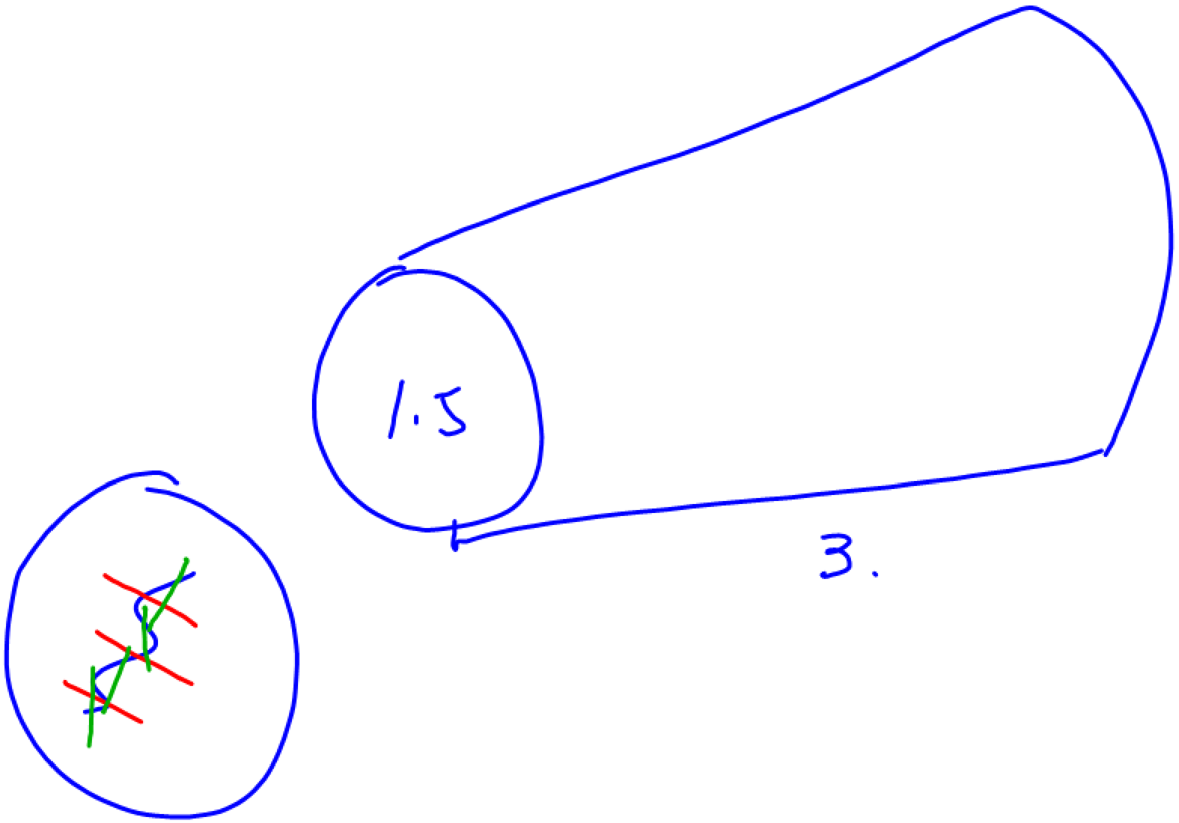
$$q(x) = 3x^2 - \frac{x^2}{Lx}$$

$$\int p(x)\,dx$$

$$-\int \frac{dx}{x\,Lx} = -\int \frac{\frac{dx}{x}}{Lx}$$

$$\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{da}{cb}$$

$$-\int \frac{\frac{dx}{x}}{Lx} = -L(Lx)$$


1.5
3.