

GUÍA 3: EDO LAPLACE**APLIQUE PROPIEDADES DE LAPLACE**

- 1) $\mathcal{L}[\sin(2t)-1]$ 2) $\mathcal{L}[t^5+3\cos(3t)]$ 3) $\mathcal{L}[t^2+6t-3]$ 4) $\mathcal{L}^{-1}\left[\frac{20}{s^2+9}\right]$
- 5) $\mathcal{L}^{-1}\left[\frac{1}{s^7}\right]$ 6) $\mathcal{L}^{-1}\left[\frac{10s}{4s^2+24}\right]$ 7) $\mathcal{L}^{-1}\left[\frac{1}{(s)^{n+1}}\right]$ 8) $\mathcal{L}[2t+3e^{-2t}-\cos(4t)]$
- 9) $\mathcal{L}\left[\frac{e^{-t}\sin(t)+\sin(2t)}{\sin(t)}\right]$ 10) $\mathcal{L}[e^{2t}+(1+t)^2]$ 11) $\mathcal{L}[4t^2-5\sin(3t)]$
- 12) $\mathcal{L}\left[(e^t-e^{-t})^2\right]$ 13) $\mathcal{L}^{-1}\left[\frac{3s-2}{s^2+9s+20}\right]$ 14) $\mathcal{L}^{-1}\left[\frac{s^2+9s+2}{s^2(s+3)}\right]$
- 15) $\mathcal{L}^{-1}\left[\frac{3s^3+s^2+8}{s^2(s^2+4)}\right]$ 16) $\mathcal{L}^{-1}\left[\frac{5s+2}{s^2-s-12}\right]$ 17) $\mathcal{L}[2t^2+3t-6]$
- 18) $\mathcal{L}^{-1}\left[\frac{6s^2-3s+14}{s^3-2s^2+4s-8}\right]$ 19) $\mathcal{L}[2t^3+3\sin(3t)-6]$ 20) $\mathcal{L}^{-1}\left[\frac{1-s^2}{s^3+2s^2}\right]$
- 21) $\mathcal{L}^{-1}\left[\frac{-s^2-6s-1}{(s^2+4)(s^2+1)}\right]$ 22) $\mathcal{L}\left[\left(\frac{2-e^{-2t}}{2}\right)^2\right]$ 23) $\mathcal{L}\left[\frac{\cos(2t)}{(\cos(t)+\sin(t))}\right]$

RESUELVA LAS SIGUIENTES EDO POR LAPLACE:

- 1) $\frac{dy}{dx}-2y=\cos(2t) \quad ; \quad y(0)=3$
- 2) $y'+2y=t \quad ; \quad y(0)=-1$
- 3) $y''+5y=-8e^{-t} \quad ; \quad \text{si } y(0)=2 \quad ; \quad y'(0)=8$
- 4) $y''-3y'+2y=e^{-4t} \quad ; \quad y(0)=1 \quad ; \quad y'(0)=5$
- 5) $y''-3y'+2y=e^{-2t} \quad ; \quad y(0)=1 \quad ; \quad y'(0)=3$
- 6) $y''-2y'-8y=-8e^{-t} \quad ; \quad y(0)=2 \quad ; \quad y'(0)=12$
- 7) $y''-4y'+3y=1 \quad \text{si} \quad y(0)=1 \quad ; \quad y'(0)=4$

8) $y' + 2y = t^2$; $y(0) = -1$

9) $y''' - 4y'' = 4$; $y(0) = y'(0) = 0$; $y''(0) = 1$

10) $y'' - 2y' = e^{-2t}$; $y(0) = 1$; $y'(0) = -1$

11) $y'' - 4y' = 6e^{3t} - 3e^{-t}$; $y(0) = 1$; $y'(0) = -1$

12) $y'' - 2y' - 3y = -8e^{-3t}$; $y(0) = 2$; $y'(0) = 12$

13) $y'' - 3y' + 2y = e^{3t}$; $y(0) = 1$; $y'(0) = 0$

14) $y'' - 4y' = 6e^{3t}$; $y(0) = 1$; $y'(0) = -1$

15) $y' + y = \sin(t)$; $y(0) = 1$

16) $y' + 6y = e^{4t}$; $y(0) = 2$

17) $y'' - 3y' = e^{-3t}$; $y(0) = 1$; $y'(0) = -1$

18) $y' - 4y = 3t$; $y(0) = 2$

19) $y'' + 4y = 3\cos(t)$; $y(0) = 0$; $y'(0) = 0$

20) $y'' + 3y' - 18y = e^{-3t}$; $y(0) = 1$; $y'(0) = -1$

21) $y' - 2y = \sin(2t)$; $y(0) = 1$