Calcular $\mathcal{L}\{f(t)\}$ de : **(Metodo Alternativo)**

1) $f(t) = (t+2)\,u(t-3)$

- $f(t) = ((t-3\underbrace{+3}_{})+2)\,u(t-3)$

$f(t) = ((t-3)+5)\,u(t-3) \;\Big|\; \underline{t-3\to t}$

$f(t) = (\underbrace{t}_{}+5)\,u(t-3) \;\Big|\; \mathcal{L}\{\}$

$F(s) = \left[\frac{1}{s^2}+\frac{5}{s}\right]e^{-3s}$

- $f(t) = (t+2)\,u(t-3)$

$f(t) = ((t+3)+2)\,u(t-3)$

$f(t) = (t+5)\,u(t-3)$

2) $f(t) = e^{2-t}\,u(t-4)$

$f(t) = e^{2-(t+4)}\,u(t-4)$

$f(t) = e^{-2-t}\,u(t-4)$

$f(t) = e^{-2}\cdot e^{-t}\,u(t-4) \;\Big|\; \mathcal{L}\{\}$

$F(s) = \left(\frac{e^{-2}}{s+1}\right)e^{-4s}$

FACULTAD DE INGENIERÍA
UNIVERSIDAD DE SAN CARLOS DE GUATEMALA

Calcular $\mathcal{L}\{f(t)\}$ de :

3) $f(t) = (t^2+1)\,u(t-4)$

$$f(t) = \left((\underbrace{t-4}_{a}+\underbrace{4}_{b})^2+1\right)u(t-4)$$

$$f(t) = \left(\underbrace{(t-4)^2}+\underbrace{2\,4\,(t-4)}+\underbrace{16}+1\right)u(t-4)$$

$$f(t) = \left((t-4)^2+8(t-4)+17\right)u(t-4) \quad \Big|\, t-4 \to t$$

$$f(t) = (t^2+8t+17)\,u(t-4)$$

- $f(t) = (t^2+1)\,u(t-4)$

$$f(t) = \left((t+4)^2+1\right)u(t-4)$$

$$f(t) = (t^2+8t+16+1)\,u(t-4)$$

$$f(t) = (t^2+8t+17)\,u(t-4) \quad \Big|\, \mathcal{L}\{\}$$

$$F(s) = \left(\frac{2}{s^3}+\frac{8}{s^2}+\frac{17}{s}\right)e^{-4s}$$

- $f(t) = \cos(t)\,u(t-2)$

$$f(t) = \cos(\underbrace{t}_{a}+\underbrace{2}_{b})\,u(t-2)$$

$$f(t) = \left(\cos(t)\cdot\cos(2) - \text{sen}(t)\,\text{sen}(2)\right)u(t-2)$$

FACULTAD DE INGENIERÍA
UNIVERSIDAD DE SAN CARLOS DE GUATEMALA

Calcular la Tranformada Inversa $\mathcal{L}^{-1}\{F(S)\}$ de :

$$1)\ F(s) = \frac{e^{-2s}}{s^2(s+1)} = e^{-2s}\left[\frac{1}{s^2(s+1)}\right]$$

$$F(s) = e^{-2s}\left[\frac{-1}{s} + \frac{1}{s^2} + \frac{1}{s+1}\right] \quad \Big|\ \mathcal{L}^{-1}\{\ \}$$

$$f(t) = u(t-2)\left[-1 + t + e^{-t}\right]$$

$$f(t) = u(t-2)\left[-1 + (t-2) + e^{-(t-2)}\right]$$

FACULTAD DE INGENIERÍA
UNIVERSIDAD DE SAN CARLOS DE GUATEMALA

Encuentre la $\mathcal{L}\{f(t)\}$ en terminos de escalon unitaro :

$$\boldsymbol{f(t)} = \begin{cases} t & si\ 0 \le t < 1 \quad a \\ t^2 - 4t + 4 & si\ 1 \le t < 4 \quad b \\ t & si\ t \ge 4 \quad k \end{cases}$$

- $f(t) = f_1(t)[u(t-0) - u(t-a)] + f_2(t)[u(t-a) - u(t-b)] +$
  $f_3(t)[u(t-b) - u(t-c)] + \ldots\ldots f_n(t)\, u(t-k)$

FACULTAD DE INGENIERÍA
UNIVERSIDAD DE SAN CARLOS DE GUATEMALA