9.9)

$$X(s) = \frac{1}{(s+1)(s+2)} = \underbrace{\frac{A}{s+1} + \frac{B}{s+2}}_{\mathcal{L}^{-1}}$$

$R\{s\} > -1 \quad R\{s\} > -1 \cap R\{s\} > -2$

$A = 1 \qquad B = -1$

$$A = \left[(s+1)\,X(s)\right]\Big|_{s=-1} = 1$$

$$B = \left[X(s)\,(s+2)\right]\Big|_{s=-2} = -1$$

$$x(t) = \left(e^{-t} - e^{-2t}\right)u(t) \longleftrightarrow R\{s\} < -1$$

9.10)

$$X(s) = \frac{1}{(s+1)(s+2)} = \underbrace{\frac{1}{s+1} - \frac{1}{s+2}}_{\mathcal{L}^{-1}}$$

$R\{s\} < -1 \qquad R\{s\} < -2$

$$x(t) = -\left(e^{-t} - e^{-2t}\right)u(-t)$$

9.11) $X(s) = \dfrac{1}{(s+1)(s+2)}$ → $-2 < \mathrm{ROC}\{s\} < -1$

$= \dfrac{1}{s+1} - \dfrac{1}{s+2}$ → $\mathrm{ROC}\{s\} < -1$ → $\mathrm{ROC}\{s\} > -2$

$\mathcal{L}^{-1}$

$x(t) = -e^{-t}u(-t) - e^{-2t}u(t)$

9.20)

$H(s) = \dfrac{s-1}{(s+1)(s-2)} = \dfrac{A}{(s+1)} + \dfrac{B}{(s-2)}$

$A = \left.\dfrac{(s-1)(s+1)}{(s+1)(s-2)}\right|_{s=-1} = \dfrac{-2}{-3} = \dfrac{2}{3}$

$B = \left.\dfrac{(s-1)(s-2)}{(s+1)(s-2)}\right|_{s=2} = \dfrac{1}{2}$

Si $H(s)$ es causal $\mathrm{ROC}\{s\} \subseteq R^{+}\{s\}$

$h(t) = \left(\dfrac{2}{3}e^{-t} + \dfrac{1}{3}e^{2t}\right)u(t)$ → $\mathrm{ROC}\{s\} > 2$

Si $H(s)$ es estable $\rightarrow$ $j\omega = 0 \in ROC\{s\}$

$ROC\{s\} > 2 \not\ni 0 \rightarrow$ No estable

9.21) $h(t) = e^{2t} u(t)$

$H(s) = \frac{1}{s-2}$ $\quad ROC\{s\} > 2 \supset \hat{R}\{s\}$