

## 略解

演習問題 1 :

1)  $y(t) = 2 - e^{-t} - e^{-3t}$

2)  $x(t) = \frac{1}{3} \sin t - \frac{1}{6} \sin 2t$

3)  $y(t) = \frac{1}{8} + \frac{1}{8} e^{-t} (7 \cos \sqrt{7}t + \sqrt{7} \sin \sqrt{7}t)$

演習問題 2 :

$$\begin{aligned}\Psi(x, s) &= \frac{p(e^{\frac{s}{v}(x-L)} - e^{-\frac{s}{v}(x+L)})}{\{(s+1)^2 + p^2\}(1 - e^{-\frac{2s}{v}L})} \\ &= \sum_{k=0}^{\infty} \frac{pe^{-\frac{1}{v}(-x+L+2Lk)s}}{(s+1)^2 + p^2} - \sum_{k=1}^{\infty} \frac{pe^{-\frac{1}{v}(x-L+2Lk)s}}{(s+1)^2 + p^2}\end{aligned}$$