

2.29. (2)

g) $h(t) = (2e^{-t} - e^{(t-100)/100}) u(t)$

$h(t) = 0 \quad \forall t < 0 \Rightarrow$ causal

$$\int_{-\infty}^{\infty} |h(t)| dt = \int_0^{\infty} |2e^{-t} - e^{\frac{t-100}{100}}| dt = \int_0^{\infty} 2e^{-t} dt + \int_0^{\infty} e^{\frac{t-100}{100}} dt =$$

$$= -2e^{-t} \Big|_0^{\infty} + 100 e^{\frac{t-100}{100}} \Big|_0^{\infty} = -e^{-\infty} + 2e^0 + 100 e^{\frac{\infty-100}{100}} - 100 e^{\frac{0-100}{100}} = 2 + 100e^{\infty} - 100e^{-1} =$$

$$= 2 - \frac{100}{e} + \infty = \infty \Rightarrow$$
 not stable