EE 30344 — Signals and Systems I

Quiz 9 – December 4, 2006

Let $h(t)$ and $H(s)$ be the impulse response and system function of a stable and causal system, respectively. $H(s)$ is rational and has a pole at $s = -2$, and it does not have a zero at the origin. Other poles and zeros are not known.

Determine whether the following six statements are true or false, and explain your answer briefly.

(a) The FT of $h(t)e^{3t}$ exists.

(b) $\int_{-\infty}^{\infty} h(t)dt = 0$.

(c) A system with impulse response $th(t)$ is causal and stable.

(d) The LT of $dh(t)/dt$ has at least one pole.

(e) $H(s) = H(-s)$.

(f) $\lim_{t \to \infty} h(t) = 0$.

(17 pts. in total for each problem, 10 pts. for a correct answer and 7 pts. for a (brief) explanation.)