GATE ASSIGNMENT 2

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Download latex-tikz codes from

https://github.com/AI20BTECH11014/EE3900-Linear-Systems-and-Signal-processing/blob/main/Gate_Assignment_2/Gate_Assignment_2.tex

1 EC 2007 Q.16

If the Laplace transform of a signal $y(t)$ is

$$y(s) = \frac{1}{s(s-1)}$$

then its final value is

1) -1
2) 0
3) 1
4) unbounded

2 Solution

Theorem 2.1. *FINAL VALUE THEOREM The final value theorem states*

$$\lim_{t\to+\infty} f(t) = \lim_{s\to 0} sF(s) \tag{2.0.1}$$

It determines the steady-state value of the system response without finding the inverse transform.It is applicable only for stable systems.

s=1 is right s-plane pole.As the system is not lining left half of s-plane,the system is unstable.Hence, it is unbounded. $\therefore$ option 4 is correct.