

Operational Properties I - Part III

1. Find $f(t)$.

$$\mathcal{L}^{-1} \left\{ \frac{e^{-\pi s}}{s^2+1} \right\}$$

2. Find $f(t)$.

$$\mathcal{L}^{-1} \left\{ \frac{e^{-s}}{s(s+1)} \right\}$$

3. Write the function in terms of unit step functions. Find the Laplace transform of the given function.

$$f(t) = \begin{cases} 2, & 0 \leq t < 3 \\ -2, & t \geq 3 \end{cases}$$

4. Write the function in terms of unit step functions. Find the Laplace transform of the given function.

$$f(t) = \begin{cases} 0, & 0 \leq t < 1 \\ t^2, & t \geq 1 \end{cases}$$

5. Write the function in terms of unit step functions. Find the Laplace transform of the given function.

$$f(t) = \begin{cases} t, & 0 \leq t < 2 \\ 0, & t \geq 2 \end{cases}$$