

Operational Properties II

1. Use the Derivatives of Transforms Theorem to evaluate the given Laplace Transform and write your solution in terms of s .

$$\mathcal{L}\{te^{-10t}\}$$

2. Use the Derivatives of Transforms Theorem to evaluate the given Laplace Transform and write your solution in terms of s .

$$\mathcal{L}\{t \cos(2t)\}$$

3. Use the Laplace transform to solve the given initial-value problem.

$$y' + y = t \sin(t), \quad y(0) = 0$$

4. Use the Convolution Theorem to evaluate the given Laplace Transform and write your solution in terms of s .

Do not evaluate the integral before transforming.

$$\mathcal{L}\{e^{-t} * e^t \cos(t)\}$$

5. Use the Convolution Theorem to evaluate the given Laplace Transform and write your solution in terms of s .

Do not evaluate the integral before transforming.

$$\mathcal{L}\left\{\int_0^t e^{-\tau} \cos(\tau) d\tau\right\}$$

6. Use the Convolution Theorem to evaluate the given Laplace Transform and write your solution in terms of s .

Do not evaluate the integral before transforming.

$$\mathcal{L}\left\{\int_0^t \tau e^{t-\tau} d\tau\right\}$$