

## 7.2 and 7.3: Operation Properties

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1. Use Laplace transform to solve the given initial-value problem
  - a.  $y' + 6y = e^{4t}, y(0) = 2$
  - b.  $y'' + 5y' + 4y = 0, y(0) = 1, y'(0) = 0$
  - c.  $y'' + y = \sqrt{2} \sin \sqrt{2}t, y(0) = 10, y'(0) = 0$
  
2. Find either  $F(s)$  or  $f(t)$ , as indicated.
  - a.  $\mathcal{L}\{t^3 e^{-2t}\}$
  - b.  $\mathcal{L}\{e^t \sin 3t\}$
  - c.  $\mathcal{L}\{(1 - e^t + 3e^{-4t}) \cos 5t\}$
  - d.  $\mathcal{L}^{-1}\left\{\frac{1}{s^2 - 6s + 10}\right\}$
  - e.  $\mathcal{L}^{-1}\left\{\frac{s}{s^2 + 4s + 5}\right\}$
  - f.  $\mathcal{L}^{-1}\left\{\frac{2s - 1}{s^2(s + 1)^3}\right\}$