

The Laplace Transform and the Inverse Laplace Transform (5.1 - 5.4)

1. Find the Laplace transform of the following functions.

a. $f(t) = e^{3t} \cos 2t$

b. $f(t) = t \cos 3t$

c. $f(t) = t^6 - 4t^2 + 5$

d. $f(t) = t^6 e^{5t}$

2. Find the inverse Laplace transforms of the following function.

$$F(s) = \frac{s}{s^2 - 6s + 13}.$$

3. Find the solution of the following IVP by the Laplace transform.

$$y' - 2y = 4t, \quad y(0) = 0.$$