MATH045/EE020A ODE HW week#8

Instructor: Heyrim Cho
Due May. 27, 2022

Find the Laplace transform.

1.

$$f(t) = \begin{cases} t, & 0 \le t < 1, \\ 2, & t = 1, \\ t-4, & 1 < t < 2, \\ 3, & 2 \le t. \end{cases}$$

2.

$$f(t) = \begin{cases} te^t, & 0 \le t < 2, \\ e^t, & 2 \le t \end{cases}$$

Use the table of Laplace transforms to find the inverse Laplace transform.

3.

$$F(s) = \frac{3}{s-1} + \frac{4s+1}{s^2-2s+10}$$

4.

$$F(s) = \frac{2s^2 - s - 3}{(s+1)^3}$$

5.

$$F(s) = \frac{s+5}{s^2+6s+18}$$

6.

$$F(s) = \frac{3-(s+1)(s-2)}{(s+1)(s+2)(s-2)}$$

7.

$$F(s) = \frac{-s^2+4}{(s+4)(s-2)(s-1)}$$

8.

$$F(s) = \frac{2s+1}{(s-1)^2(s+2)}$$