SNS LAB 7

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K036

Sem 3

B. Tech Cybersecurity

clc

clear all;

close all;

syms t s

x1 = exp(-2\*t) \* heaviside(t);

F1 = int(x1 \* exp(-s\*t), t, 0, inf);

display(F1);

x2 = exp(2\*t) \* heaviside(t);

F2 = int(x2 \* exp(-s\*t), t, 0, inf);

display(F2);

x3 = exp(-2\*t) \* heaviside(-t);

F3 = int(x3 \* exp(-s\*t), t, -inf, 0);

display(F3);

x4 = exp(-2\*t) \* heaviside(t) + exp(-4\*t) \* heaviside(t);

F4 = int(x4 \* exp(-s\*t), t, 0, inf);

display(F4);

F1 =

piecewise(s < -2, Inf, real(s) ~= -2 & ~in(s, 'real'), 1/(s + 2) - limit(exp(- 2\*t - t\*s), t, Inf)/(s + 2), angle(s) in Dom::Interval(-pi/2, pi/2) & s ~= 0 | -2 < s, 1/(s + 2), (real(s) == -2 | in(s, 'real')) & ~angle(s) in Dom::Interval(-pi/2, pi/2) & (~in(s, 'real') | s == -2), int(exp(-2\*t)\*exp(-t\*s), t, 0, Inf))

F2 =

piecewise(2 < s, 1/(s - 2), s < 2, Inf, real(s) ~= 2 & ~in(s, 'real'), 1/(s - 2) - limit(exp(2\*t - t\*s), t, Inf)/(s - 2), (real(s) == 2 | in(s, 'real')) & (~in(s, 'real') | s == 2), int(exp(2\*t)\*exp(-t\*s), t, 0, Inf))

F3 =

piecewise(-2 < s, Inf, s < -2, -1/(s + 2), real(s) ~= -2 & ~in(s, 'real'), limit(exp(- 2\*t - t\*s), t, -Inf)/(s + 2) - 1/(s + 2), (real(s) == -2 | in(s, 'real')) & (~in(s, 'real') | s == -2), int(exp(-2\*t)\*exp(-t\*s), t, -Inf, 0))

F4 =

piecewise(s <= -4, Inf, s in Dom::Interval(-4, -2), Inf + 1/(s + 4), real(s) ~= -2 & real(s) ~= -4 & ~in(s, 'real'), - limit(exp(- 2\*t - t\*s), t, Inf)/(s + 2) - limit(exp(- 4\*t - t\*s), t, Inf)/(s + 4) + 1/(s + 2) + 1/(s + 4), angle(s) in Dom::Interval(-pi/2, pi/2) & s ~= 0 | -2 < s, 1/(s + 2) + 1/(s + 4), real(s) ~= -2 & ~in(s, 'real') & angle(s) in Dom::Interval(-pi/2, pi/2), - limit(exp(- 2\*t - t\*s), t, Inf)/(s + 2) + 1/(s + 2) + 1/(s + 4), real(s) ~= -4 & ~in(s, 'real') & angle(s) in Dom::Interval(-pi/2, pi/2), - limit(exp(- 4\*t - t\*s), t, Inf)/(s + 4) + 1/(s + 2) + 1/(s + 4), (real(s) == -2 | in(s, 'real')) & ~angle(s) in Dom::Interval(-pi/2, pi/2) & (angle(s) in Dom::Interval(-pi/2, pi/2) & s ~= 0 | -4 < s) & (~in(s, 'real') | s == -2), 1/(s + 4) + int(exp(-2\*t)\*exp(-t\*s), t, 0, Inf))

clc;

clc;

clear all;

close all;

%using inbuilt function:

syms t s

f1 = exp(-2\*t)\*heaviside(t); % Example function: e^(-2t)u(t)

F1 = laplace(f1, t, s);

disp('The Laplace transform of the function is:');

disp(F1);

f2 = exp(2\*t)\*heaviside(t); % Example function: e^(2t)u(t)

F2 = laplace(f2, t, s);

disp('The Laplace transform of the function is:');

disp(F2);

f3 = heaviside(t)+heaviside(t-3); % Example function: u(t)u(t-3)

F3 = laplace(f3, t, s);

disp('The Laplace transform of the function is:');

disp(F3);

f4 = exp(-2\*t)\*heaviside(t)+exp(-4\*t)\*heaviside(t); % Example function: e^(-2t)u(t)+e^(-4t)u(t)

F4 = laplace(f4, t, s);

disp('The Laplace transform of the function is:');

disp(F4);

F5=ilaplace(F1)

display(F5)

F6=ilaplace(F2)

display(F6)

F7=ilaplace(F3)

display(F7)

F8=ilaplace(F4)

display(F8)

The Laplace transform of the function is:

1/(s + 2)

The Laplace transform of the function is:

1/(s - 2)

The Laplace transform of the function is:

exp(-3\*s)/s + 1/s

The Laplace transform of the function is:

1/(s + 2) + 1/(s + 4)

F5 =

exp(-2\*t)

F5 =

exp(-2\*t)

F6 =

exp(2\*t)

F6 =

exp(2\*t)

F7 =

heaviside(t - 3) + 1

F7 =

heaviside(t - 3) + 1

F8 =

exp(-2\*t) + exp(-4\*t)

F8 =

exp(-2\*t) + exp(-4\*t)