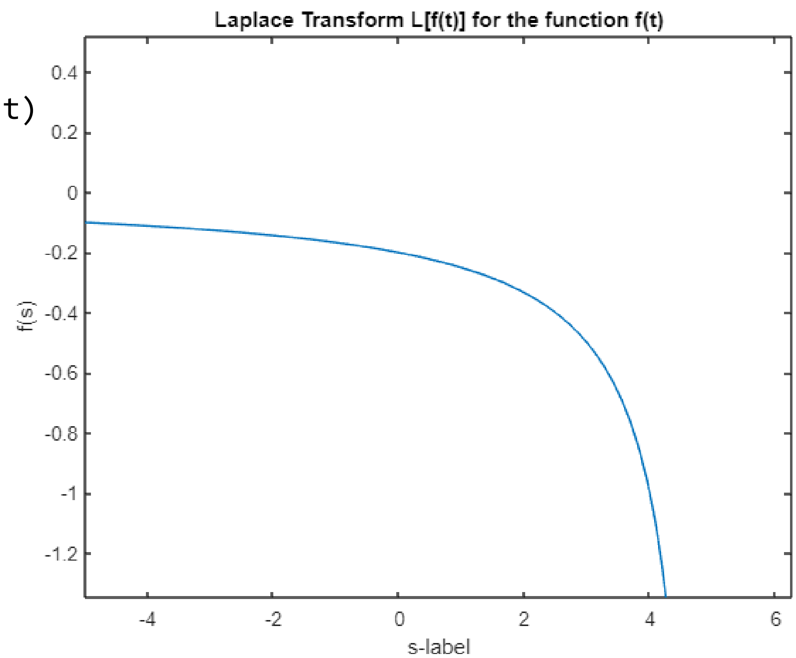
% Laplace Transform of regular and Unit step function

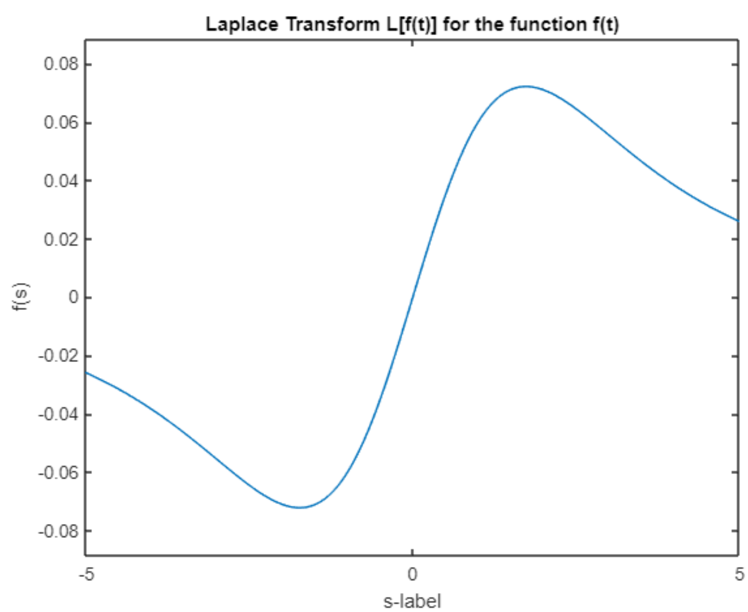
```
syms t s a
f_t = input(‘Enter the function f(t): ‘)
f_s = laplace(f_t)
ezplot(f_s)
xlabel(‘s-label’)
ylabel(‘f(s)’)
title(‘Laplace Transform L[f(t)] for the function f(t)’)
```

Output Window

```
>>> Enter the function f(t): exp(5*t)

 f_t =

exp(5*t)


f_s =

1/(s - 5)
```

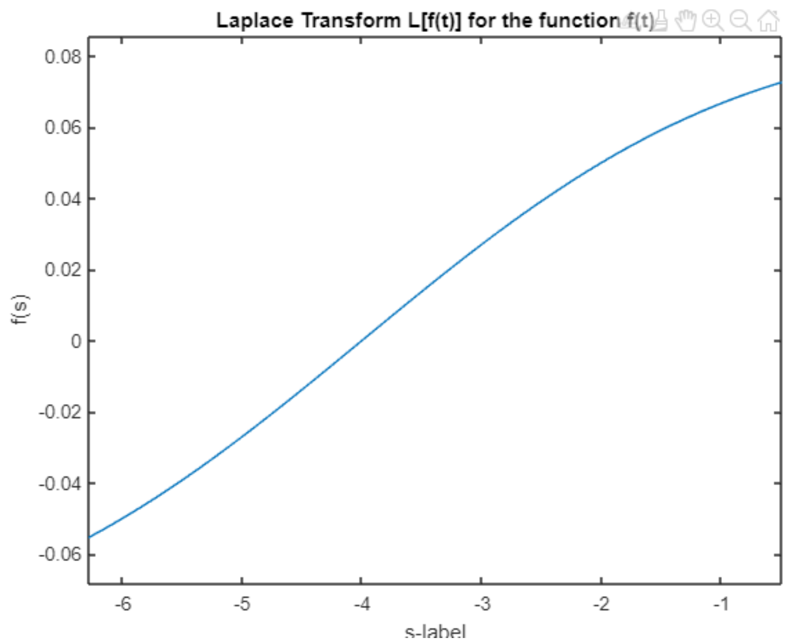



```
>>> Enter the function f(t):

t*sin(3*t)

f_t =

t*sin(3*t)

 f_s =

(6*s)/(s^2 + 9)^2

 Enter the function f(t):

t*sin(3*t)

f_t =

t*sin(3*t)


f_s =

(6*s)/(s^2 + 9)^2
```

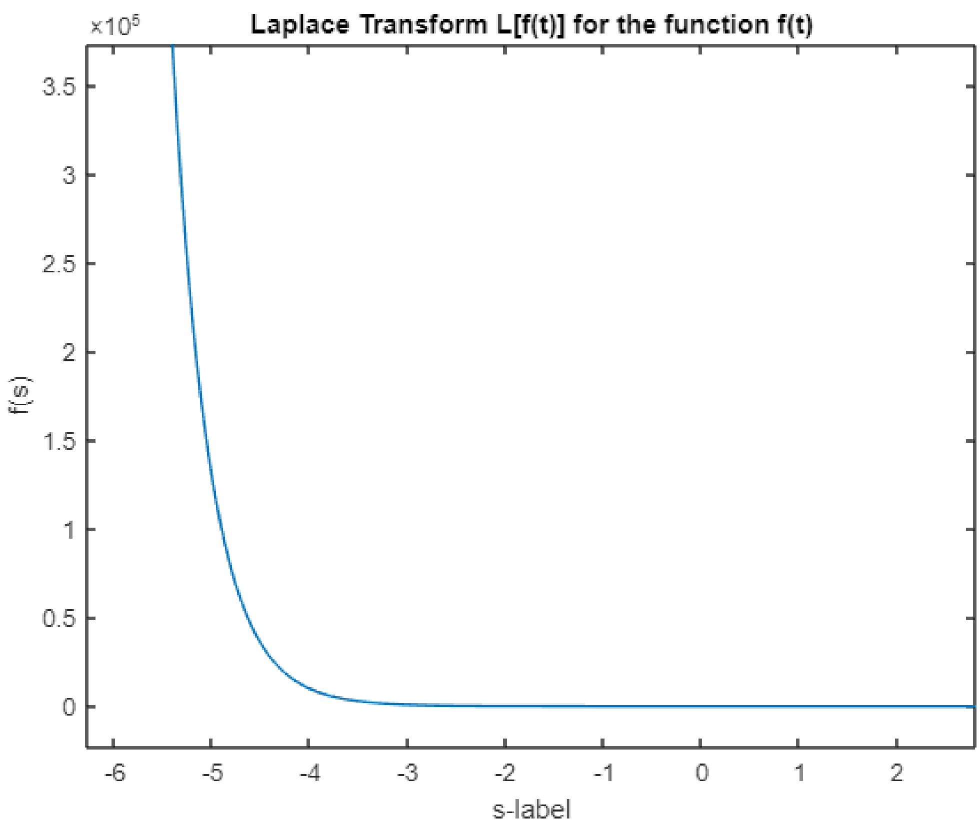


```
Enter the function f(t):
cos(2*t)/t

f_t =

cos(2*t)/t


f_s =

laplace(1/t, t, s) - log(4/s^2 + 1)/2
```

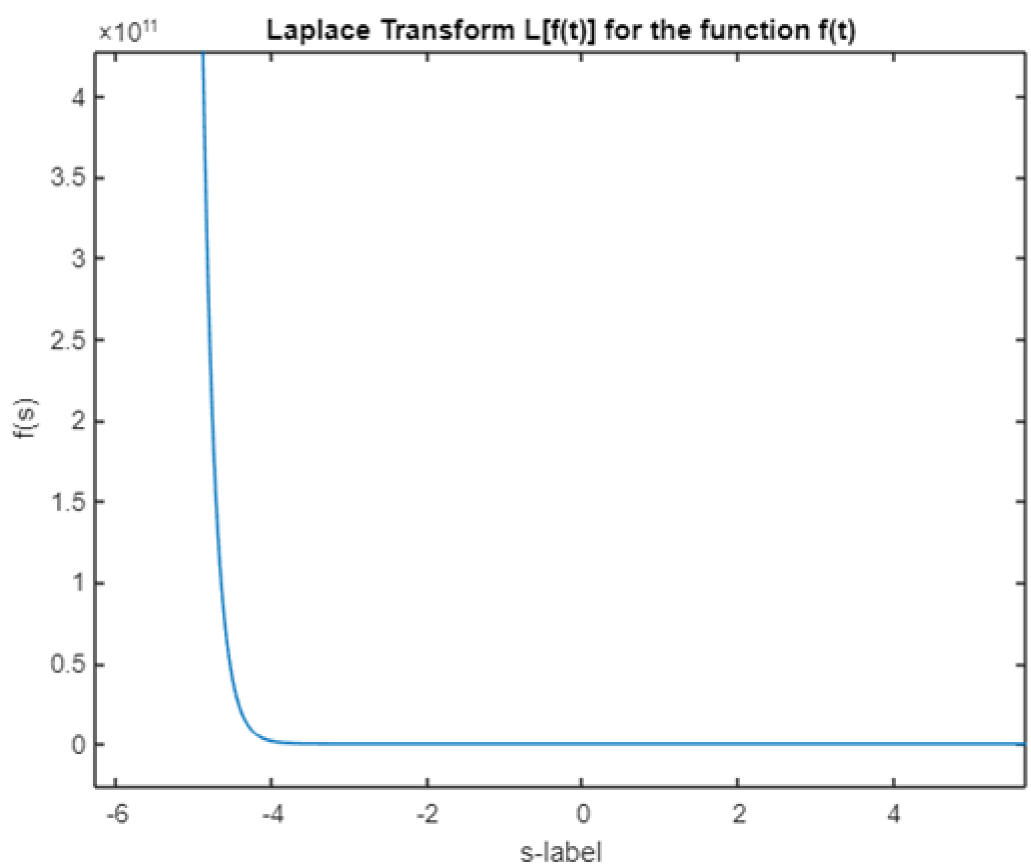
```
>>> Enter the function f(t):
exp(-4*t)*cos(6*t)

f_t =

cos(6*t)*exp(-4*t)


f_s =

(s + 4)/((s + 4)^2 + 36)
```



```
Enter the function f(t):

(t-1)*(heaviside(t-1) - heaviside(t-2)) +(3-t)*(heaviside(t-2) -
heaviside(t- 3))

f_t =

(heaviside(t - 1) - heaviside(t - 2))*(t - 1) - (heaviside(t - 2) -
heaviside(t - 3))*(t - 3)


f_s =

(exp(-3*s)*(s*exp(s) - exp(s) + 1))/s^2 - (exp(-2*s)*(s - exp(s) +
1))/s^2
```



```
Enter the function f(t):
sin(t)*(heaviside(t)-heaviside(t-pi))+sin(2*t)*(heaviside(t-pi)-
heaviside(t-2*pi))+sin(3*t)*(heaviside(t-2*pi))

f_t =

sin(2*t)*(heaviside(t - pi) - heaviside(t - 2*pi)) +
sin(3*t)*heaviside(t - 2*pi) + sin(t)*(heaviside(t) - heaviside(t -
pi))


f_s =

(2*exp(pi*s) - 2)/(4*exp(2*pi*s) + s^2*exp(2*pi*s)) + (exp(pi*s) +
1)/(exp(pi*s) + s^2*exp(pi*s)) + (3*exp(-2*pi*s))/(s^2 + 9)
```



```
Enter the function f(t):
(t^2)*(heaviside(t-0)-heaviside(t-2))+(4*t)*(heaviside(t-2))

f_t =

4*t*heaviside(t - 2) - t^2*(heaviside(t - 2) - heaviside(t))


f_s =

(4*exp(-2*s))/s - (2*exp(-2*s))/s^3 + 2/s^3
```